An Address
ON
ACUTE HÆMATEMESIS AND MELÆNA.

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As this is a clinical society I have not hesitated to use two symptoms as the title for my address and to review them in the light of my own personal experience, only supplementing this by hospital records in a few instances. I am using the terms in their generally accepted meanings, hæmatemesis—the vomiting of blood, and melæna—the passage of altered blood per rectum. This use of the latter is modern, but its employment in this way is now sanctioned by usage, and it is forgotten that it formerly designated a disease characterised by evacuation from the bowel and vomiting of dark bloody matter. Comparatively recently it implied the ejection of black matter from either stomach, bowel, or both. The term acute is used to signify the sudden onset of severe hæmorrhage, and I am dealing only with those cases in which hæmorrhage is *the* symptom for which aid is sought. I am not considering those in which streaks of blood in small amounts are vomited, occult blood discovered in the fæces, or large quantities of unaltered blood passed from a simple or malignant growth of the colon or rectum.

A CONDITION AMENABLE TO CLINICAL STUDY.

Bleeding from the gastro-intestinal tract is an eminently suitable subject for clinical study. It owns many causes, some of which are directly amenable to surgical treatment and are curable. In some recovery is usual without operative interference and with very little risk to life; in others the outlook is grave unless operation is carried out at the earliest opportune time. The operative treatment required may be as diverse as partial gastrectomy or omentopexy, and it therefore opens up a survey of almost the whole range of abdominal surgery. The question of immediate treatment is one that we have frequently to face. Nothing is more alarming to patient and friends than a visible loss of blood. Our medical colleagues, knowing that the control of hæmorrhage is the province of the surgeon, call us in, and we need to have reasoned answers for our delay or for our plea for operation.

Recently considerable interest has been aroused in this condition, and, as you may remember, there has been a joint discussion on the subject at the Royal Society of Medicine,[1] a lecture there by Gustave Monod[2] on hæmatemesis "without lesions," and a short paper on its surgical treatment by my friend and colleague, Mr. A. J. Walton.[3] I was unable to attend the discussion, but views differing so much from my own appear to have been expressed at that meeting and given in the papers that I started to review my clinical evidence. I am fortunate in having an almost complete record of the after-history of the patients upon whom I have carried out abdominal operations, as, from the very first, I have had a regular follow-through system and thus am able to find out results in a very short time. In point of individual experience as opposed to collected statistics, judging from other figures, I have had an exceptional number of cases; they are certainly sufficient to enable a definite opinion to be given.

[1] Trans. Roy. Soc. of Med., 1924, xvii. (Sects. Surg., Med., Ther.), pp. 1–33, and THE LANCET, 1924, i., 543–6.
[2] Trans. Roy. Soc. of Med., 1924, xvii., Med. Sect., p. 3.
[3] THE LANCET, 1924, i., 351.

Hæmorrhage presupposes a breach of surface; I am not convinced that oozing of blood from a mucous membrane can be the cause of serious bleeding. In the early days of gastric surgery I operated upon patients during the stage of acute hæmorrhage, and in a certain group was unable to discover any lesion. In all, however, that then came to post-mortem examination and in all that have occurred later definite gastric erosions or acute ulcers were found. I am aware that there are those who believe in this possibility. Your President,[4] Mr. A. H. Burgess, in his contribution to the joint discussion previously mentioned, has recorded two cases in which at post-mortem examination no gross lesion could be found to account for the hæmorrhage. Monod mentioned three recent cases in his paper, in whom no lesion was discovered at operation, from which all recovered. But as it is manifestly impossible exhaustively to examine the mucous membrane of the stomach through any safe ante-mortem incision these are not convincing. It has sometimes only been possible to find the lesion after death by stretching the stomach and holding it up to a strong light.

The matter is not of mere academic interest, as I believe that many of these patients may develop chronic ulcers in later life. I dealt with the subject of hæmatemesis from acute ulceration of the stomach very fully in a paper published last year[5] based on 63 cases treated by operation.

TWO CLINICAL GROUPS OF CASES.

The cases I wish to consider now fall into two clinical groups—(1) in which the patient has been in perfect health and has had no previous digestive trouble requiring medical aid, and (2) those with a preceding history of digestive disturbance.

1. This is the most difficult to deal with both from the point of view of diagnosis and of treatment. There are two classes of case, the typical "gastric ulcer" of my student days much less common than formerly, the anæmic woman of 18 to 25, and the adult of either sex who without warning vomits a large quantity of blood or has a fainting attack and passes it altered per rectum. Both are of extreme importance, but in the latter the problem is one to which the answer is urgently necessary in view of the serious risk of overlooking a lesion of grave import, for carcinoma of the stomach may herald its presence by this means and certain cases of chronic ulcer of the stomach or duodenum.

2. In the second group the hæmorrhage is a complication, usually a very grave one, which follows months or years of abdominal ill-health and needs much less discussion from the point of view of diagnosis and treatment. I have been surprised to read that hæmorrhage from a chronic ulcer was not looked upon as a particularly dangerous complication, and that both surgeons and physicians of wide experience had never seen a death from hæmorrhage from this cause. In considering the risk of delay in the surgical treatment of these cases it is useless to argue from figures in which both acute and chronic ulcers are taken together, as the death-rate in the former is very low under efficient medical treatment. I have always considered it as a very grave complication, and have had patients die of hæmorrhage while awaiting operation, or because it was not undertaken at the most opportune time. In addition four patients of mine who had had hæmatemesis died as the result of perforation while awaiting operation. The last occurred just before Christmas.

A patient, male, aged 42, was under my care at the London Hospital 18 months previously with a chronic gastric ulcer. He had a very septic mouth and refused treatment, both dental and abdominal, and left hospital. He remained in good digestive health till two days before admission, when he had slight epigastric pain followed in 36 hours by profuse hæmatemesis for which he was sent

[4] Trans. Roy. Soc. of Med., 1924 (Joint Discussion), p. 12.
[5] THE LANCET, 1924, i., 477.

up by his medical man. His condition was extremely bad, but I considered that the risk of delay was less than the risk of operating, as his mouth was in a condition only to be described as appalling. However, after being in bed for 13 days and six days after all hæmorrhage had ceased, he suddenly perforated at 4 A.M. and died in spite of immediate operation.

It is cases such as these that makes me consider hæmatemesis from a chronic ulcer very seriously.

I have been under the impression as the result of my personal experience that hæmatemesis is much less common than formerly and that the age and sex incidence have changed. To test this I asked my first assistant, Mr. G. P. B. Huddy, to take two years separated by an interval of ten and ascertain the admissions both to medical and surgical wards of *all* cases of acute hæmatemesis. In the year 1913, 81 cases were admitted to hospital for this cause: 45 were female. In 1923, 48 cases, only 16 female. This, although the total admissions of patients with gastric and duodenal ulcers had risen from 224 in the former year with 59 women to 348 in the latter with 74 women. The age-incidence has also changed. In 1913 more than half the cases (41) were under the age of 35, and 14 between 20–25. In 1923 only four occurred in this quinquennium, and 14 before 35. I believe this diminution to be due to two causes. In the first group to better care of the mouth and naso-pharynx and the better treatment of abdominal infections, in the second to earlier operation on chronic ulcer preventing the later onset of hæmorrhage. They show that preventive surgery is as important to the individual as preventive medicine.

CASES WITHOUT PREVIOUS DIGESTIVE TROUBLE.

The type in the first group was formerly the young anæmic woman, but this sex-incidence is becoming much less common, and it is now just as frequently met with in the young male. Acute hæmatemesis of this nature is accompanied by much collapse, and the immediate treatment is an adequate dose of morphia and warmth. The less that is done beyond this the better. I have never seen the advantage of withholding water by the mouth; it can have no effect on the bleeding, and thirst is more easily controlled and with less exposure than by rectal infusion. Ice to suck and an ice-bag applied to the epigastrium are practices that have nothing whatever to recommend them. In this type of case I believe that operation is *never* indicated. The possibility of the bleeding coming from an ulcer that can be recognised, or if recognised adequately dealt with, is very small indeed. The risk of exploration is much greater than that of efficient non-operative treatment.

Acute Ulcer.

Gastro-jejunostomy is still advocated in certain of these cases, when the bleeding is severe and the patient in a condition of the gravest danger.[1] If the bleeding is the result of acute ulceration with a recent infection of the stomach, this operation only involves additional risks, and if the hæmorrhage is coming from an eroded artery I fail to see how it is to be stopped by a gastro-jejunostomy, which must of necessity be performed without any reference to the site of the lesion. Your President and myself, among others, have both recorded cases in which hæmorrhage continued unchecked by gastro-jejunostomy and lead to the death of the patient. In my opinion, under no circumstances should operation be carried out at the time of the hæmatemesis. If the bleeding recurs it is good treatment to wash out the stomach gently with warm water to which one drachm of soda bicarbonate to the pint has been added, with the possible addition of adrenalin. I think there is too much tendency to keep these patients for an undue length of time without food. So soon as desire returns a start should be made with albumin water and then some such unirritating diet as Benger's food. It must be but seldom that blood transfusion is called for in cases of this type. This is the immediate treatment of the patient.

So soon as possible a working diagnosis of the cause of the bleeding must be found. What are the possibilities? By far the commonest is acute ulceration of the stomach due to infection; such causes as the vomiting of blood swallowed from epistaxis need not detain us, but we must be on the alert for rarer conditions, such as simple tumours of the stomach and disease of the spleen, and very exceptionally indeed, blood diseases. I have been called to two cases of hæmatemesis in which abdominal examination revealed an enlarged spleen and to one in which operation later discovered the cause to be an adenomatous polypus.

The whole patient must be examined, search being made for possible source of infection, particular attention being paid to oral cavity, including teeth, tonsils, naso-pharynx and ears, and lungs. Acute hæmatemesis may be a complication of early pulmonary tuberculosis, and I have been struck with the frequency with which this disease has been found in association with chronic gastric ulcer. Blood examination, not only to determine the grade of anæmia, but the presence of any of the rare blood diseases known to be associated with this condition, and to group the blood in view of possible transfusion. It is well for purposes of record and for comparison with later investigations to have test and barium meals given which may provide corroborative evidence of importance, and in the latent cases of chronic ulcer may show the lesion, and so indicate the necessity for treatment without delay.

If infective foci are found, these must be treated, the bowels regulated, and the patient kept under observation with the warning that further hæmorrhage should lead to abdominal exploration. If the investigations in any way point to abdominal disease, operation should be carried out. In those cases in which every investigation as to cause brings a negative result I am strongly of the opinion that it is safer to explore the abdomen. I believe that it is often possible to prevent further hæmorrhage and the occurrence of chronic ulceration of the stomach or the development of gall-stones later.

In the paper previously mentioned I drew attention to this matter, and lay stress on the importance of recognising these cases of acute hæmatemesis as usually due to acute ulcers, not only from the point of view of the prevention of further acute ulcers but of chronic ulcers and their later complication, carcinoma. The findings in the 63 cases explored were as follows: in 29 definite disease of the appendix was found, in 15 cholecystitis. I have been able to follow up the majority of these and proved them to be well. Since that paper was written I have operated on a further six; in one that I shall mention presently an acute ulcer was later discovered post mortem, in three the appendix was at fault, in two the gall-bladder; in these last two, as in four previously reported, a pure culture of colon bacillus was obtained from the bile.

I have had many instances of patients with chronic gastric ulcer in whom there was a very definite history of painless hæmatemesis several years before. When these cases of acute hæmatemesis were operated on at once the death-rate was high—even if nothing was done and we usually failed to find the ulcer or ulcers. Recently I was led to this procedure in the belief that a chronic ulcer was present; nothing was found on exploration, the bleeding continued, the patient died, and autopsy revealed an acute ulcer. He was a man of 39, who eight months previously had had pain after food not accompanied by vomiting. He then got quite well and remained so until four weeks before admission to hospital, when he had a similar attack which culminated in a profuse hæmatemesis on June 24th, 1924, when he was admitted to hospital. Three days later he had another hæmatemesis, and as he was not recovering I was asked to see him.

[1] Walton, A. J.: THE LANCET, 1924, i., 477.

He was pale with a pulse of 120. In view of the past history I operated; all abdominal organs appeared normal. Stomach and duodenum were normal, gall-bladder and spleen normal. I removed his appendix, which to the naked eye was normal, and this was confirmed on microscopic examination. As is my usual practice, I returned to the examination of the stomach and duodenum after exploring the whole abdomen. I have found that in this way ulcers can be discovered which otherwise might easily be missed. The exposure of the viscus leads to a definite change in the peritoneum around the ulcer, the area being surrounded by a red stippling, which I described many years ago.[7] At the post-mortem no thickening of peritoneum or any other external abnormality of the stomach was found. On opening the stomach a shallow circular ulcer was present, 1·5 cm. in diameter on the lesser curvature, 9·5 cm. from the pylorus, with a perforation leading directly into a branch of the coronary artery.

Acute ulcers may become chronic under certain conditions, but in women, particularly those with gastric ptosis, there may be recurrent acute ulcers with repeated attacks of hæmatemesis. This is the type of case that frequently develops an hour-glass stomach, and in many, at the time of operation, the ulcers which produced it have healed. I have had the opportunity of following cases from the acute ulcer stage to that of hour-glass stomach on the one hand, and to chronic gastric ulcer and carcinoma on the other.

Causes other than Acute Ulcer.

As I have said previously, the usual cause for a painless acute hæmatemesis is an acute ulcer, but in addition to the causes I have mentioned, it may be the first prominent symptom in cirrhosis of the liver.

Hepatic Cirrhosis.—I have seen it stated that cirrhosis of liver is one of the commonest and most important causes of acute hæmatemesis.[8] This has not been my experience; I look on it as one of the rare causes. I have had experience of three cases, one of which came under my care last year. In order to see if this was borne out by the general hospital figures, I again asked the help of my first assistant. In the two selected years there was no admission for hæmatemesis diagnosed as due to this cause or in which the diagnosis was arrived at later. On investigating the P.M. reports it was discovered that in a patient who was admitted with hæmatemesis and died almost immediately, marked cirrhosis of liver was present with acute gastric ulcers and acute endocarditis. It is possible that the acute ulcers were due to infection, and the hæmatemesis to this and not to the cirrhosis. I believe omentopexy is indicated in the hæmatemesis due to cirrhosis of the liver.

Gastric Carcinoma.—I need say little about the treatment of acute hæmatemesis due to carcinoma of the stomach. The knowledge that such a condition may be the cause in adults is enough.

Splenic Enlargement.—Acute painless hæmatemesis is by no means an infrequent complication in certain cases of enlarged spleen and does not necessarily indicate concomitant cirrhosis of the liver. I have removed the spleen in eight cases on account of an acute hæmatemesis that first brought the patient under observation, and three of these patients I was asked to see as "gastric ulcer." One of them had been in hospital three times previously with hæmatemesis.

The following are my figures supplementing those I gave in 1918[9]: I have carried out splenectomy in 25 cases of splenic anæmia (I am using this term to include Banti's disease); among these, 8 were undertaken for hæmatemesis; the liver was cirrhotic to naked-eye examination in 4 only; in the whole series it was cirrhotic in 10. There was only one death among the 25, a boy of 14, in whom there was doubt of the diagnosis and which was probably primary liver cirrhosis. I have recorded it elsewhere.[9] Of the eight cases operated upon because of their hæmatemesis all those in whom the liver was normal at the time of operation are quite well and have had no further hæmatemesis—11 years, 8 years 9 months, 5 years 3 months, and 18 months later. Of the 16 cases in which there was no hæmorrhage previously to operation all those without cirrhosis of liver have had no hæmorrhage and are quite well. Of those with cirrhosis one has had melæna on one occasion, but is now well. Among the four cases operated on for hæmorrhage in whom cirrhosis of liver was present two died, one 18 months later from a further hæmorrhage, and one, with very advanced cirrhosis, of exhaustion after being tapped many times. The following are brief notes of these cases.

A woman of 21, who had had an enlarged spleen for 14 years, and in the year before I operated had had three profuse hæmorrhages. She had ascites and had been tapped on one occasion, 17 pints being withdrawn. After operation she regained and remained in perfect health for 18 months, when she died after a very profuse hæmorrhage. A man of 35, who noticed swelling of his abdomen and seven months later vomited blood. He was admitted to hospital; 14 pints of fluid were withdrawn by tapping, and four days later 15 pints. I was asked to see him. I operated, the liver was large and cirrhotic, and I removed a spleen which weighed 2 lb. 5 oz. He stood the operation well, but had to be tapped three weeks later and then at 14 daily intervals. He died of exhaustion two months after operation.

Duncan Wood [10] has recorded two cases with full post-mortem reports in which the origin of the fatal hæmatemesis was from rupture of an œsophageal varix in one case, an enlarged vasa brevia in another. In both cirrhosis of liver was present at the time of the splenectomy, but even when this is marked patients remain well over long periods of time. For example, in 1914 I operated on a boy of 12 who had typical Banti's disease with ascites, and removed his spleen. The liver was large and cirrhotic. He has remained in perfect health, and I last saw him in December, 1924. I look on removal of the spleen in these conditions as a most satisfactory operation. If undertaken before the onset of cirrhosis of liver the word cure can justifiably be used. Even after the onset of cirrhosis the majority of patients remain well, but hæmorrhage may recur and prove fatal.

Melæna.

Melæna may similarly be the first symptom which brings the patient to the medical man. It may appear in the midst of perfect health and in this type is found almost exclusively in men. The immediate treatment is the same as in acute hæmatemesis. Melæna occurs much more often in the early hours of the morning than does hæmatemesis; a very common history is that the patient gets up about 2 A.M., goes to the lavatory and faints. While acute ulcers of the duodenum do undoubtedly occur they are much more rare than acute gastric ulcers and, on the other hand, a chronic duodenal ulcer more frequently, but still very rarely, remains latent, and does not give rise to symptoms until bleeding occurs.

Immediate treatment should be followed by thorough investigation, and, just as in hæmatemesis, exploration undertaken if no external cause is found with a view to treating the lesion, if it can be demonstrated, and removing its cause. All of us must have known of patients operated upon for painless melæna and gastro-jejunostomy carried out, no lesion having been discovered, and the attacks have recurred as before. I should like again to say that I consider gastro-jejunostomy should never be performed in the absence of a demonstrable lesion. I say this knowing full well that I have operated and been unable to discover an ulcer, only to find it years later and to have it found later by others.

In thus separating melæna and hæmatemesis I do not want it to be understood that hæmatemesis does

[7] Annals of Surgery, March, 1915, p. 380.
[8] Index of Differential Diagnosis, p. 272.
[9] Annals of Surgery, October, 1918, lxviii., 379.
[10] British Journal of Surgery, January, 1924, p. 587.

not occur with duodenal ulcer; it does, and very profusely, but as a rule melæna is the more marked. Similarly in chronic gastric ulcer it is very rarely indeed that melæna is present without hæmatemesis; when this happens it is usually in cases with hour-glass stomach.

CASES WITH PREVIOUS HISTORY OF INDIGESTION.

To turn now to those cases of hæmatemesis and melæna in which a chronic ulcer is diagnosed on a preceding history of long-continued attacks of indigestion. Here operation should be carried out as soon as the condition of the patient will admit. I am not an advocate of "immediate" operation, meaning thereby intervention during the period of hæmorrhage. In cases of bleeding from a chronic ulcer there is often a period after the first vomiting or melæna in which it is possible to operate; if this is not seized upon other and fatal bleeding may occur as in secondary hæmorrhage which it so much resembles. This is what I meant by operation at an opportune time, a view put forward on my behalf by my colleague, Dr. Robert Hutchison, at the before-mentioned discussion.

Bleeding from a chronic ulcer may be due to the rupture of a small aneurysm, or much more commonly to an acute infection spreading into the vessel. There are two great dangers—we are dealing with a hæmorrhage comparable to secondary hæmorrhage that brooks no delay, and also there is the danger that I consider is a very great one of coincident perforation, due to acute change in the ulcer. My practice has been to operate as soon as possible after the shock of the first hæmorrhage; this is usually in about 36 hours, plenty of fluid being given meanwhile, and, if necessary, a blood transfusion. It is essential to deal *directly* with the ulcer. If in the stomach, I usually tie the vessels on either side, destroy the ulcer with the cautery, and do a posterior gastro-jejunostomy to its cardiac side, but partial gastrectomy may be necessary; in the duodenum, posterior gastro-jejunostomy after the destruction of the ulcer with the cautery, taking care in suturing not to narrow the pylorus.

The immediate results of treatment are better in duodenal ulcer than in gastric, the remote are not so favourable. Up to the end of 1922 I had operated on 73 cases of chronic duodenal ulcer for acute hæmorrhage with 4 deaths, 82 cases of acute hæmorrhage from a chronic gastric ulcer with 7 deaths. It will be remembered that the death-rate in the treatment of uncomplicated cases of gastric ulcer is higher than that of duodenal. Of the 69 survivors of the cases of duodenal ulcer 50 have remained well more than two years after operation, 27 for more than six years, 14 for more than ten. Thirteen had recurrence of bleeding, and of these I wish to speak more fully later, in dealing with post-operative bleeding, and 6 were lost sight of before two years had elapsed. Of the 76 gastric survivors, 69 are quite well over two years, 41 over six years, 12 over ten years—really excellent results. In one remarkable case I was able to get a post-mortem 30 months later.

On June 6th, 1919, a male, aged 44, was admitted to the London Hospital with acute hæmatemesis which recurred four days later. He gave a typical chronic gastric history extending over six years. At the operation on June 24th, I found a large indurated ulcer in the centre of the lesser curvature and have a note that had his condition admitted I should have carried out partial gastrectomy. I tied the vessels on both sides of the ulcer and did a posterior gastro-jejunostomy to its cardiac side. He remained quite well abdominally but died of pulmonary tuberculosis in December, 1921. At the post-mortem the gastro-jejunostomy opening was perfect and 4·5 cm. in diameter. The only remains of the ulcer was a faint scar on the lesser curvature.

There has been no recurrence of bleeding in any uncomplicated case. In one of my early cases, however, I had to do a lateral anastomosis later on account of occasional vomiting. He had a slight hæmatemesis a few months later which was not repeated. This is the only case of hæmatemesis I have had after operation for chronic gastric ulcer.

Showing the uselessness of gastro-jejunostomy alone and also evidence of what I have already stated that the hæmorrhage is usually due to an acute infection is the following:—

In October, 1914, I operated on a man of 35 who had been having attacks of pain for over a year, and four days before I saw him had an acute hæmatemesis which was repeated. At operation I found a small chronic ulcer on the lesser curvature near the pylorus, treated the ulcer in the usual way, and carried out posterior gastro-jejunostomy. Post-mortem revealed in addition to the chronic ulcer an acute ulcer higher on the lesser curvature with a small ruptured aneurysm.

This while showing the recent acute infection is, of course, fortunately very unusual, the acute infection in most cases being of the original chronic ulcer.

POST-OPERATIVE HÆMATEMESIS.

We now come to a very important group, that of post-operative hæmatemesis. This may occur after any abdominal operation, and I shall speak of it under two headings.

(1) *After Operation upon Abdominal Organs Generally.*

This is well known after operation for abdominal infection, particularly in connexion with acute appendicitis and acute cholecystitis. It is exceedingly rare, and in a number of cases a definite chronic ulcer has been found post mortem, the bleeding being due to an acute infection. In other cases acute ulcers are present of infective origin. Treatment is on the lines indicated with that of the general condition and the prognosis grave.

(2) *After Operations on the Stomach: Early Hæmorrhage.*

Nothing can be more alarming to the patient and his friends or more distressing to the surgeon than an acute hæmorrhage following gastro-jejunostomy or partial gastrectomy. All had gone well and a good prognosis given when the surgeon is recalled a few hours later to find the patient at death's door. Nothing but immediate operation is justifiable, the anastomosis must be undone and restitched. Fortunately I rarely had to do this, and since I have left off using a jejunal clamp and loosen the gastric one before putting in the anterior layer of sutures, I have never had a case of post-operative bleeding, and it must be of the greatest rarity. In any case, even before this, it was extremely rare. I will give you figures obtained from my last 100 cases of gastro-jejunostomy in which I think hæmorrhage was prevented in two, for after loosening the gastric clamp I had to secure a spurting vessel which would have caused serious bleeding and might have necessitated a second operation.

At a time when there was difficulty in obtaining what I consider the best catgut for stomach operations I had two cases of delayed hæmatemesis from too early absorption of the inner layer of sutures, both alarming, but neither fortunately fatal or of sufficient severity to require intervention. Both occurred on the fifth day after operation.

Remote Post-operative Hæmorrhage.

I now want to turn to acute hæmorrhage occurring at late periods after gastro-jejunostomy for chronic duodenal ulcer, cases with which I am afraid we are all familiar, which impress themselves on our imagination and make us think that they are more frequent than they really are. As I was writing this a patient returned to hospital who illustrates excellently points that I wish to bring out.

S. N., a male, aged 34, was sent to me on Nov. 12th, 1923, with the following history: For 14 years he had had attacks of pain late after food with free intervals. Night waking had been a feature for four years. Five weeks before I saw him

he had a severe hæmorrhage with three relapses. He was a thin man, anæmic, and in spite of his recent bleeding his test-meal was 0·16 free HCl, 58 total acidity. I operated on Nov. 30th, and found two chronic ulcers on the anterior surface of the first part of the duodenum. The gall-bladder was normal. I could not investigate his appendix owing to his condition. I destroyed the ulcers with the cautery, sutured vertically so as not to narrow the pylorus, and carried out the usual posterior gastro-jejunostomy. He had an uninterrupted convalescence, but did not show a satisfactory reduction of gastric acidity. His post-operative meal was 0·16 and 58. He was readmitted to hospital after a severe hæmatemesis on Nov. 13th last. Up to ten days before admission he was perfectly well. He then began to lose energy and to look pale. He fainted several times and passed black stools. On the day of admission he was suddenly seized with profuse hæmatemesis. He rapidly recovered under the usual treatment. His test-meal was 0·14 and 50, and his barium meal showed no abnormality. As I had not been able to remove his appendix I reoperated on Dec. 19th. The site of the ulcer was visible as two thin smooth scars; the anastomosis was perfect. I removed the appendix, which to the naked eye showed slight thickening of its tip.

The points I want to draw attention to are these. Those patients who have had hæmorrhage shortly before operation are those liable to get it again. Those cases in which there is not sufficient post-operative reduction of gastric acidity frequently have further symptoms, not necessary hæmorrhage, but those with this symptom before operation may get it after. It is only found after duodenal ulcer, and even then is a rare post-operative symptom. It is quite obvious that bleeding of this sort must come from an ulcer. My experience, as I have frequently said, is that chronic gastric and duodenal ulcers heal when gastro-jejunostomy is correctly performed, and that any later symptoms that may arise are due to fresh ulceration either in the region of the anastomosis or in the jejunum, but as I shall hope to show these ulcers may be so minute as to be undiscovered at operation.

To take first of all the cases of chronic ulcer operated upon for hæmorrhage up to two years ago. None of the gastric cases, with the exception of that just mentioned, suffered from remote post-operative bleeding even when they had been operated on for hæmatemesis; there was no difference in those treated by partial gastrectomy or gastro-jejunostomy. Eighteen cases of chronic duodenal ulcer suffered from post-operative hæmatemesis, but of those 13 had it before operation. In all these cases the bleeding was profuse, necessitating treatment in bed.

It will be obvious that the risk of remote post-operative hæmatemesis in those cases of chronic duodenal ulcer who did not suffer from it before operation is very slight, among my own cases about ½ per cent. There are two possible sources: (1) the original ulcer, (2) fresh ulceration or erosions. I have many times made the statement that the original ulcer heals when it is of a suitable nature for treatment by gastro-jejunostomy, and in these cases, unless the ulcer is a large posterior one eroding the pancreas, healing always takes place after a gastro-jejunostomy, and my experience now extends to over 60 re-examined at a second operation or post-mortem at remote periods.

Cases with no Bleeding before Operation.

Those cases in which there was no bleeding before the operation are five in number. In all except one it came on within 18 months of operation. One patient, operated on in 1912, has had three attacks, the last a year ago; another, operated on in 1913, had attacks lasting to 1916, and has been quite well ever since, and last month I had a letter from him stating he had never been so well in his life. The third had a profuse hæmatemesis after slipping downstairs 13 months after operation, and now, 20 months later, is quite well without further trouble. None of these were explored. The fourth is the most interesting and difficult to account for.

In December, 1915, I operated on a male, aged 37, who since the age of 17 had had attacks of pain after food. I found a mass in the first part of the duodenum with a definite anterior ulcer. I invaginated it and carried out posterior gastro-jejunostomy and removed a much thickened strictured appendix. He remained absolutely well until August, 1921, when he was camping out; he felt giddy one evening and at 5 A.M. next morning had a profuse hæmatemesis, repeated that day and the third day. He remained in bed a month and I saw him two months later. His test-meal was 0·11 and 52, much too high for a patient with a gastro-jejunostomy. I explored and found the duodenal ulcer absolutely healed and the first part of the duodenum normal but for a faint scar. There was no trace of ulceration in the jejunum or at the anastomosis. I opened the stomach and examined by sight the anastomosis and jejunum. His gall-bladder was normal. I heard seven months later that he had had another attack of an exactly similar nature.

I have quoted this case rather fully, for it stands unique among my cases in that symptoms first appeared at a period longer than two years after operation; in this instance there was nearly six years of perfect health. In one patient, a male of 40, operated on in 1911, painless hæmorrhage occurred in five months. I operated and found a true jejunal ulcer. He remained well and died of another cause nearly eight years later. We obtained a P.M. and found faint scars in duodenum and jejunum. I have post-operative test-meals in 13 out of these 18 cases; in 8 there was but little reduction; in 5 it was reduced almost to normal, in itself high after a posterior gastro-jejunostomy.

Cases of Recurrent Bleeding.

We now pass to those cases, 13 in number, which were operated on for bleeding and in which it recurred. It seems from what I have read on the subject to be assumed in many cases that this comes from the original ulcer or a recurrence. I do not believe this to be the case, not only because I have never seen it unhealed in many inspections, but because I think I have evidence to prove fresh ulceration. Of these patients one developed a definite jejunal ulcer, one an ulcer at the anastomosis, from which I removed silk. Two others were explored, one five years ago, but two years after the original operation. The duodenal ulcer had healed and there was no trace of secondary ulceration. He has remained quite well and is playing Rugby football. The other, eight and a half years ago, 22 months after his original operation, exactly the same state of affairs was found, and he remains well.

From these remarks two facts seem to emerge—one is that these post-operative hæmorrhages may result from definite chronic secondary ulcers, but usually no lesion is discoverable, and I believe it emanates from small erosions due to infection. It behoves us, therefore, to be satisfied that we have cleared up all abdominal infection. If the condition of the patient would not admit of this at the original operation and the post-operative meal shows insufficient reduction of gastric acidity, then further exploration should be carried out. In the patients reoperated on, in two I removed the appendix, which I had been unable to do on the first occasion. As far as the original operation was concerned I have been quite unable to find any constant common factor either in the position of the ulcer or in adhesions, or in the condition of other organs. As I have said on another occasion, if we knew the cause of secondary ulceration we should also know that of primary.

As these post-operative hæmorrhages occur almost entirely after gastro-jejunostomy for chronic duodenal ulcer, and we know that true jejunal ulcers also occur almost exclusively in this condition, and only found when acidity is not reduced, I look on them as small acute ulcers of this nature. In treating these cases of post-operative hæmatemesis a careful examination of teeth and naso-pharynx must be made, but lesions here should, of course, have been treated before the first operation. In cases of painless hæmatemesis, if the surgeon is satisfied that everything necessary in the abdomen was done at the previous operation, exploration should not be undertaken. In the rarer cases in which it is preceded by pain, and there is some evidence of a chronic jejunal ulcer, a thorough course of treatment directed towards reducing gastric

acidity must be carried out, and only if relapse occurs should operative treatment be advised.

Failure to Reduce Gastric Acidity.

We have yet to learn what is the cause of failure to reduce gastric acidity by gastro-jejunostomy. I am convinced that it is essential if the operation is to be permanently successful. I have been and still am working at the subject, and although we can trace the cause in certain cases, yet in others in whom a procedure in every way identical is carried out for a lesion in every way comparable, in one patient it results in a post-operative meal of, say, no free HCl and a total acidity of 20, and in another 0·1 and 50. I believe that it is in some way due to insufficient emptying of the gastric contents through the pylorus, hence the secretion of pancreatic juice is not sufficient. There is no doubt that pyloric exclusion prevents post-operative reduction, and I am sure that the most usual single cause is adhesions of gall-bladder to duodenum, interfering with the free use of the pylorus. I am convinced that for the most effective lowering of acidity it is essential that the pylorus be used as well as the new opening. Gastro-jejunostomy cannot be looked upon as purely a mechanical operation. I should like to reaffirm what I stated last year—no patient in whom the operation brought about a sufficiently lowered gastric acidity has had any post-operative symptoms whatever.

The lessons I have drawn from this small piece of clinical research seem to me to point out the great necessity for preventive treatment—to learn the cause of acute ulcers, and so prevent their occurrence, and when once they have developed so to treat the patient that they do not progress and drift into the group of recurrent ulcers or the true chronic ulcer, and then that operation on this type should not be delayed until hæmorrhage has occurred. The old adage holds: Prevention is better than cure.

PERIODIC MEDICAL EXAMINATION.

Being a portion of an Address read before the Assurance Medical Society, on Jan. 7th, 1925,

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[IN opening an address on Life Offices and the Care of the Policy-holder, Dr. May said that, fundamentally, the aim of every life office, whether mutual or proprietary, must be to benefit its policy-holders by improving, as far as possible, its mortality experience. From the theoretical point of view this could be achieved along two chief lines: (1) by stringent selection at entry, including the careful assessment of impaired lives, and (2) by organising the care of policy-holders, so as to give them special facilities for the prevention and treatment of sickness, and thus help to ensure a favourable mortality.

Up to the present time British companies had concentrated their efforts almost entirely along the former line; in America, however, a good deal has also been attempted by some of the leading companies along the latter line. He suggested that the health activities of an insurance company might be classified under three headings, each of which he discussed in detail. These were (1) general health propaganda, (2) the endowment of research, and (3) the care and treatment of individual policy-holders. Dr. May summarised the activities on these lines of the Metropolitan Life Assurance Company of New York, which, he said, appeared to be the most active of all in the care of its assured. Under the third heading, an important item was the periodic medical examination of policy-holders, on which Dr. May spoke as follows:—]

The outstanding feature of the health work of the Metropolitan Life Assurance Company of New York among ordinary policy-holders is the provision of facilities for *periodical medical examination*,[1] free of all cost to the holders. This scheme has been in existence since February, 1914, and allows the following privileges: (*a*) For holders of a policy of $1000—an examination after four years, and every fourth year thereafter; (*b*) for holders of a policy of $2000—after three years and every third year; (*c*) for holders of a policy of $3000—after two years and every second year; (*d*) for holders of a policy of over $3000—after one year and thereafter every year.

The examinations are conducted on behalf of the company by the Health Extension Institute of New York—an institution which undertakes periodical examinations for some 30 different insurance offices, as well as for employers and private individuals. It has branches throughout the States, so that policy-holders can be examined in almost any town of importance. The examination includes a routine survey by ordinary methods of the heart, lungs, abdominal organs, nervous system, nose and throat, eyes, general physique, and blood pressure, and a chemical and microscopical examination of the urine.

Nothing is said as to the provision of facilities for sputum examination, radiography, or blood examinations. Presumably, if their desirability is indicated by the routine examination, the policy-holder is referred to his own medical attendant for further investigation. The result of the periodical examination is confidential between the examiner and examinee: no information regarding it is divulged to the company, so that the policy-holder cannot be adversely affected with regard to possible future proposals.

Value of Periodic Examination.

Recently there has been considerable discussion in this country as to the value of periodical examinations, and about a year ago a special meeting was convened by the Federation of Medical and Allied Services with the object of passing a resolution in favour of a similar service by British life companies. At that meeting the lay speakers seemed to assume that the detection of early disease by such an examination presented no real difficulty. They failed to realise that, in many cases, the examination could be only the preliminary to accurate diagnosis. Suppose, for example, that it revealed a trace of glycosuria. What are the alternatives? If the examiner is referred to his family doctor, he may or may not go to him. If he does, in how many cases will the practitioner really investigate the sugar metabolism on the modern lines necessary to arrive at a correct estimation of the signficance of the glycosuria? If, on the other hand, the examinee is referred to a specialist, is he willing to incur the considerable expense entailed thereby? And, if the result is favourable, will he be pleased with the company for providing him with a "free" overhaul that involves him in a considerable outlay which he feels to have been unnecessary? Exactly similar difficulties would arise in the case of many other conditions—slightly increased blood pressure, slight pulmonary catarrh, vague dyspeptic symptoms, albuminuria, and so on. It seems to me that either the company should be prepared to carry out the whole investigation of any abnormality detected in the course of the examination, or it should leave the policy-holder entirely to his own resources. The tendency of the ordinary "routine examination" will be to find out too much or too little—to interfere unnecessarily with the comfort and peace of mind of the examinee, or to lull him into an unwarranted complacency.

[1] For most of the facts in this section I am indebted to an address delivered in October, 1921, at the Annual Meeting of the Association of Life Insurance Medical Directors by the President, Augustus S. Knight, M.D.

Results of the Service.

As regards the actual results of the service, Dr. Knight's address gives some interesting figures. During the period under review, 1914–21, only 2·49 per cent. of the number eligible actually underwent medical examination. This does not look as though policy-holders were really anxious to avail themselves of the privilege. A careful statistical study was undertaken of the mortality experience up to November, 1920, of about 6000 males who presented themselves for this examination in 1914 and 1915. For this purpose the examination records were put at the disposal of the company by the Examination Institute. From these data the whole group was divided into four sub-groups according to the physical conditions revealed by examination: (1) "Preferred risks" (exceptionally good lives) (9181 policy-years); (2) "ordinary risks" (7111 policy-years); (3) "cases with albuminuria" (9850 policy-years); (4) "miscellaneous group" (with various impairments) (7485 policy-years).

The mortality experience was as follows. [Ratio of Actual Deaths to Expected by American Men (Ultimate) Table.] (1) 47 per cent.; (2) 72 per cent.; (3) 46 per cent.[2]; (4) 117 per cent. For the whole group it was 72 per cent.

Number of cases which presented themselves for a second examination: Subgroup (1) 41 per cent.; (2) 37 per cent.; (3) 33 per cent.; (4) ? (not given in Dr. Knight's paper).

These figures are of great interest, as they throw light on the answer to the question—To what type of policy-holder does the periodical examination appeal? Of the very few (2·5 per cent.) who availed themselves of the opportunity of a first "periodical examination" only about 30–40 per cent. took the trouble to appear a second time. The highest percentage was in the group who were physically fittest—i.e., who were least in need of it. The lowest percentage was among those who were told that they had a definite disability—albuminuria. In other words, it certainly seems that the people who are most anxious to avail themselves are those who are least in need of it; that it is the man who feels well who likes to come and be assured that he *is* well. To him the periodical medical examination is a species of self-indulgence; his vanity is tickled by his being pronounced "fit."

I have no time to quote Dr. Knight's exhaustive analysis of the mortality in these cases; he comes, by a different route, to the conclusion just mentioned as to the strong element of self-selection in those availing themselves of periodical examination—namely, that the privilege is made use of in inverse ratio to its utility. But to me the most striking sentence in his paper is as follows: "It would therefore be safe to say that the benefits of the life extension examinations are pretty well limited to the years immediately following the examinations, and run out at the end of about five years." I do not quite understand from the context what is the exact meaning of this sentence, whether the protection lasts five years from the date of the first periodical examination or the last. Judging, however, by the figures quoted above, it does not seem that there is any great distinction between these two alternatives—the first examination seems so often to be the last!

In spite of these limitations, the Metropolitan calculate that they are making a handsome profit on balance on the expenditure incurred in this scheme. So far as I know, in this country only two life offices have so far initiated any scheme of periodical examination for their policy-holders, and the experiment is too recent to allow any judgment of its value.

To recapitulate the pros and cons of such a scheme, it seems to me that, in theory, it is an excellent principle, which should result in mutual benefit to the office and to the individual policy-holder. In practice, however, its success would seem to be impaired by the following difficulties: (1) The incompleteness of the arrangements for a really effective diagnostic service, including the difficulty of efficient medical personnel; and (2) lack of interest among the policy-holders, of whom the great majority fail to make use of the facilities provided; among those that do, there appears to be a "selection" in favour of those whom it benefits least; and of those who do avail themselves of a first examination, comparatively few persevere by undergoing subsequent re-examination.

[2] This low mortality for albuminuria cases in the first five years of insurance is extremely interesting. (Cf. the American Medico-Actuarial Investigation figures for cases of albuminuria—mortality 78 per cent. for first five years, and 200 per cent. for next five years.)

THE PREDISPOSING CAUSES OF LEPROSY.

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MUCH of the confusion which exists with regard to leprosy is due to the want of recognition of the important rôle played by predisposing causes. There is probably no disease in which predisposing causes play a more important part than in leprosy. Many facts might be quoted to prove that healthy human beings, like the lower animals, are insusceptible to leprosy, that although the bacilli may be present in the body some predisposing cause or other is necessary before they can begin to increase in number and produce signs. Moreover, the course of the disease is profoundly affected by the nature, degree, and number of the predisposing causes. I have therefore considered it useful to study in this paper some of the commoner predisposing causes and their effects on leprosy.

Predisposing causes may be conveniently divided into temporary or self-terminating and permanent.

Temporary or Self-Curing Predisposing Causes.

These from their nature last but a short time, and while they last are accompanied either by the first signs of leprosy or by an increase in previously existing signs. They include all the acute febrile diseases such as enteric, influenza, small-pox, and other exanthemata. To take a typical case.

A female patient had a small, anæsthetic, leprous patch on her arm, which was her only sign of the disease. She developed enteric fever, and during convalescence an erythematous rash spread in patches all over the body within a few weeks. The patches were raised and contained lepra bacilli. As the patient recovered her strength the patches began to fade in colour and became flattened out to the level of the surrounding skin. The enteric had lowered the resistance of the patient and made her tissues a suitable soil for the growth of *B. lepræ*. As the resistance returned the soil became unsuitable once more and the bacilli began to disappear.

Another case was that of a patient who had had a severe attack of influenza. The signs, formerly consisting of a small anæsthetic patch on the arm, rapidly increased to deep nodulation of the back, arm, face, and ear, which again rapidly recovered as the patient regained his strength. Treatment was given, but the recovery was much more rapid than could have been expected as the result of treatment alone.

In both these cases the rapid increase of leprous signs took place in the afebrile period immediately following the febrile period of the predisposing disease.

Pregnancy is another common cause of the onset and increase of leprosy. The extra strain thrown on the system, especially in women who cease to take open-air exercise as pregnancy advances, is sufficient to cause the required conditions. Puberty, especially in poorly-nourished, rapidly-growing children, is often accompanied by the first signs of leprosy, or, if they have been present before, by their rapid increase. Besides the above, similar results may be caused by any circumstances which temporarily lower the

resistance of the body such as change of diet, injuries, unfavourable climate or surroundings, vaccination, &c.

Permanent Predisposing Causes.

These differ from the above in that they do not tend to cease spontaneously. Syphilis, chronic bowel disorders, fevers of protozoal origin, such as malaria and kala-azar, are typical of such permanent causes; but any cause which weakens resistance and tends to remain for a prolonged period, whether it be biological, climatic, or social, may be included under this heading. We shall consider the more important, permanent predisposing causes seriatim.

(*a*) *Syphilis.*—A connexion between syphilis and leprosy has long been recognised. Impey[1] classes "syphilitic leprosy" as one of the four forms of the disease. There is a popular idea in India that leprosy and syphilis are different forms of the same disease. In a paper dealing with the Effect of Antisyphilitic Treatment in Leprosy,[2] it has been shown that antisyphilitic treatment has a marked power to render a positive Wassermann reaction in leprosy negative, especially in early nerve cases; and we came to the conclusion that syphilis is an important complicating factor in both skin and nerve leprosy. The history of the first onset of leprosy following an attack of syphilis is very common; and when those who have been suffering from leprosy in a mild form contract syphilis, the former disease generally takes on a much more virulent form. There is no evidence that there is any ætiological connexion between the two diseases, but syphilis acts as a predisposing cause, and renders the human tissues a suitable soil for the growth of the lepra bacillus. It would therefore be expected that, other things being equal, the proportion of lepers would be higher among the syphilitic than among the non-syphilitic population, and as a corollary that the proportion of positive W.R.'s would be higher among lepers than among non-lepers. As a matter of fact this is found to be the case, although the high Wassermann rate cannot be entirely attributed to syphilis.[3] An excellent prognosis can generally be given in an early case of leprosy when the W.R. is positive, as the predisposing cause, syphilis, is easily removed, and, as a rule, the leprosy infection dies out rapidly after the removal of such a strong predisposing cause. In more advanced cases of leprosy, on the other hand, the prognosis in a positive W.R., though good, is not as good as in early cases, as there is not the same certainty that the W.R. indicates syphilis, and even when syphilis is the cause and has been removed there is still the leprous infiltration to deal with, which may take some years.

(*b*) *Chronic Bowel Disorders.*—Next to syphilis chronic bowel disorders form, perhaps, the most important permanent factor. Among these the most important in India are the dysenteries, amœbic and bacillary, and the chronic conditions which they frequently leave behind. Chronic constipation, with the absorption of toxins from the bowel, forms a most favourable condition for the growth of leprosy. This, unfortunately, is a condition which it is often very difficult to remedy, and in such cases the prognosis with regard to leprosy is rendered less favourable.

(*c*) *Malaria* is another common predisposing cause in India, especially benign tertian, which is sometimes very difficult to cure with quinine.

(*d*) In Bengal we have frequently found the first signs of leprosy appearing during an attack of *kala-azar*, after the fever has yielded to treatment.

(*e*) *Hookworm disease* strongly predisposes to leprosy. In five leper asylums, the inmates of which were examined for hookworm, an average of 90 per cent. were found infected. In one asylum only three were found uninfected. Remarkable improvement is often noticed in leper asylums after mass treatment for hookworm has been carried out.

(*f*) *Unsuitable diet* is another frequent predisposing cause. Hutchinson emphasised—and possibly over-emphasised—this fact in his theory that leprosy is due to fish eating, or rather, as he defined it later, the eating of badly preserved or decomposed fish. There is no doubt that this is a predisposing cause. Hutchinson's mistake was in making it the only predisposing cause and in ignoring the importance of the lepra bacilli and their transmission by contact with infectious lepers. Stale, badly preserved food, whether it be fish or meat, rice or grain, fruit or vegetables, predisposes to leprosy. Overcooked, twice cooked, and badly cooked food is also injurious.

(*g*) *Climate* is another consideration of great importance. Sir Leonard Rogers has proved,[4] by carefully collected evidence, that the incidence of leprosy closely corresponds with the humidity of the climate. Neither heat nor cold alone predisposes to leprosy, but both heat and cold accompanied by high humidity correspond with a high incidence. In this respect leprosy closely resembles tuberculosis.

(*h*) The importance of the *mental condition* of the patient must not be lost sight of in leprosy. In a disease which is so much dreaded and which brings with it social ostracism and loss of employment, mental depression, followed as it generally is by physical depression, is very common and plays not a small part in causing the progress of the disease.

(*i*) *Lack of exercise* is another important cause. *B. lepræ* lives and multiplies in the intercellular lymph spaces, and lymph stagnation is favourable for its growth. Vigorous exercise is always an essential for the treatment of leprosy, while on the contrary lazy and sluggish habits predispose to the disease. This is not uncommonly the reason why, when people of active habits retire from work and adopt a sedentary life the signs of leprosy begin to show themselves. It is also to a large extent the reason why leprosy is common among the rich. Employers not infrequently dismiss their employees on hearing that they are suffering from leprosy, whether or not the disease has reached a stage at which it is transmissible. This loss of employment, along with the accompanying mental depression, often leads to sluggish habits, and thus as an indirect result of the disease itself a powerful predisposing cause is brought into play which leads to its rapid increase.

(*j*) *Youth* has often been indicated as predisposing to leprosy. The fact, brought out by Rogers,[5] that about 50 per cent. of lepers are infected before the age of 20 certainly points to youth as the most common period for acquiring leprosy.

(*k*) *Puberty* and *pregnancy* are certainly predisposing factors, as they are in many other ways critical periods in the life-history. Moreover, on the principle that the closer the contact the greater the chance of infection, the early years of life expose to infection if the parents, guardians, friends, or relations are infectious lepers, as children are handled and cared for and kept in constant close contact with their elders, and their skin is thin and tender and much more frequently abraded than that of adults. Apart, however, from the greater chances of infection and the crises of puberty and pregnancy which are liable to light up latent infection, youth does not directly predispose to leprosy to a greater extent than other periods of life.

Another critical period is the *climacteric* in women which is not infrequently accompanied by the onset of the disease.

Though leprosy is generally confined to the first three or four decades, it is not altogether uncommon to find its onset in more advanced periods of life. To give one typical example.

A patient acquired syphilis at the age of 20. The disease gave him only slight inconvenience and he was not treated for it effectively. At the age of 68 he began to show signs of leprosy, which increased rapidly till the B_3 form of the disease was reached (see diagram). When he was 75 years of age he came for treatment, and his W.R. was found to be strongly positive. A course of antisyphilitic treatment had a marked effect, the lesions disappearing to a very large extent.

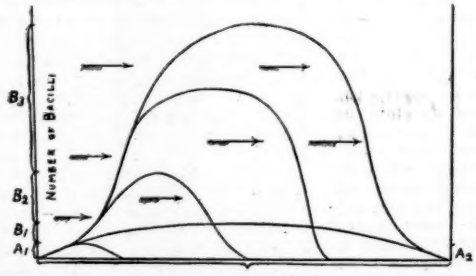
Predisposing Causes in Relation to Prognosis and Treatment.

We may expect to find one or more predisposing causes in every case of leprosy, though, while in some cases the cause is apparent, in others it is obscure. It may be taken as an axiom that the more distinct and removable the predisposing cause the better the prognosis with regard to leprosy. To try to treat a case of leprosy by special treatment without first removing the predisposing cause is like trying to drive a motor-car up hill with the hand-brake full on. Therefore, from the point of view both of prognosis and treatment, the recognition of the predisposing cause is of first importance.

Effect of Febrile Illnesses on Leprosy.—A curious phenomenon, however, is noticeable with regard to many of the predisposing causes mentioned above, especially those which produce a febrile condition. In the more advanced stages of leprosy such fevers instead of causing an increase of the disease tend to cause its resolution and disappearance. Within the last 12 months I have had under my treatment ten patients who developed kala-azar while in an advanced stage of skin leprosy. All of them without exception improved rapidly as far as leprosy was concerned, nodules and skin infiltration rapidly disappearing. Indeed, they made far better progress under the effect of kala-azar than under any form of special treatment. One very advanced case of leprosy, with abundant *B. lepræ* infiltrating the skin of face, trunk, and limbs, developed acute exfoliating dermatitis and died of pericarditis after two months' illness. Post mortem we were unable to find more than a few granular bacilli, the acute febrile condition having caused almost complete destruction of the acid-fast bacilli. I have noticed similar but less marked improvement after dengue fever, cholera, malaria, dysentery, and even after pregnancy. Trophic abscesses in the limbs when accompanied by inflammation and fever will cause rapid disappearance of both skin and nerve lesions.

Leprosy a Self-curing Disease.

I have described leprosy in a former paper [6] as a self-curing disease and give here a diagrammatic representation of this process in different types and



Leprosy curves. A = nerve (anæsthetic) leprosy. A_1 = primary nerve leprosy. A_2 = secondary nerve leprosy. B = skin (nodular) leprosy. B_1 = first stage of same; free bacilli found in the skin. B_2 = second stage; more bacilli found in the skin. B_3 = third stage; very marked, generalised infiltration, abundant bacilli. ⟶ = reaction-producing granulomatous causes.

stages of leprosy. Typical examples of the course followed by leprosy are illustrated by various curves, the perpendicular representing the number of bacilli in the body, and the horizontal the length of time. All cases pass through the A_1 stage, though some cases are difficult to recognise before they reach the B_1 stage.

In cases which are mild in type the disease may remain at the A_1 level, or it may pass on into B_1, B_2, or B_3. At any height, however, the curve may reach its uppermost limit or climax if the resistance of the body is raised sufficiently, as by the removal of the predisposing cause, either naturally, or as the result of treatment, or, as we find it chiefly in the higher curves, by the induction of immunity following on the breaking down of leprous tissue. In other words, the top of the curve corresponds to the point at which the general or special resistance of the body becomes sufficient to withstand the advance of leprosy. The febrile and other predisposing causes mentioned in the last paragraph as causing improvement in the advanced stages of leprosy may be termed potential reaction-producing causes. These are represented in the diagram as arrows.

We may consider such causes as forces applied in the directions of the arrows to bodies ascending or descending the curves. In the former, the body would tend to ascend more rapidly (and the steeper the curve the more so); in the latter the body would tend to descend more rapidly. In other words, when reaction-producing causes come into play during the rise of the curve they tend to make the disease increase; when they come into play during the fall of the curve they hasten recovery.

Part of the effect of various drugs used in leprosy, though not always the most important part, is due to this reaction-producing power which they possess in common with the febrile and other causes mentioned above. It will therefore be clear that in patients who have not reached the climax of the disease, and whose curve may still be represented as on the upward gradient, special treatment may have to be applied with care until the predisposing cause has been eliminated, and the general health and resistance of the patient improved. On the other hand, the injection of preparations of hydnocarpus and chaulmoogra oils has often the effect of arresting the disease and bringing about its gradual elimination, even in spite of the presence of minor predisposing causes.

The objection may be raised that if leprosy is a self-curing disease then why remedy it, why not let the curve take its natural course seeing it will reach the base line again in the end? The object of the removal of predisposing causes and of special treatment is to flatten the curve, to bring about the crisis as soon as possible, and to hasten the down-grade of the curve. Most of the deformities of lepers are due to lingering on the down-grade as the type passes from B_2 down to A_2. To avoid this, vigorous treatment must be applied when once the signs of the disease have begun to diminish and, above all, sluggishness must be avoided, as of all the predisposing causes it is perhaps the most common and most harmful. Moreover, vigorous exercise enables vigorous treatment with hydnocarpus ester injections to be borne without excessive reactions, and in this way improvement can be hastened.

Summary.

1. It is maintained that in almost all cases the onset of leprosy is due to some predisposing cause in conjunction with infection with *B. lepræ*.

2. Some of these will remove themselves; of the rest the majority can be removed by treatment.

3. Certain of these causes which predispose to the onset of the disease and to its increase in the first stages tend to bring about resolution of the lesions and general improvement in later stages.

4. It is essential to remove predisposing causes as far as possible before carrying out vigorous special treatment, as otherwise the latter may cause an increase rather than a diminution of the disease.

5. Most deformities in leprosy are due to the lack of vigorous treatment in the later stages of the disease.

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BREAST DISEASE AND THE *DEMODEX FOLLICULORUM*.

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AND

A. MILLICENT SOMERSET.

(From the Cancer Research Laboratories of the Middlesex Hospital.)

IN 1909 Borrel,[1] in collaboration with Gastinel and Gorescu, found an acarus living in the sebaceous glands at the orifice of the nipple in six cases of breast cancer. He put forward the hypothesis that the acarus transmitted a virus infection, and that the cancer was caused by this virus. The importance of this hypothesis lies in the suggestion that breast cancer is caused by some agent conveyed to the patient from outside through the nipple, for, clearly, if there is any truth in this theory, it should be possible to take effective preventive measures. Borrel's work has attracted very little attention in this country, and we have not been able to find any confirmation of his results in the literature. In view of our complete ignorance of the cause of breast disease, it seemed desirable to investigate and determine whether any data could be found in support of this theory.

During the last year, owing to the kindness of the medical staff of the Middlesex Hospital, and especially of Mr. Sampson Handley, we have had the opportunity of examining 63 breast specimens removed by operation, and have been able to confirm Borrel's finding that an acarus lives at the orifice of the nipple in a large percentage (nearly 60) of patients with breast cancer. The parasite has been found in breasts removed for mastitis and for papillomatous growths, and also in a few post-mortem cases when the patients have not, during life, complained of any breast trouble. It occurs apparently irrespective of the social class or personal habits of the patient, for it has been found in nine private cases out of a total of ten examined.

The *Demodex folliculorum* has been known for many years; it was found in man by Berger and Heale in 1841, and by Simon in 1842. It was first described in the dog by Tulk in 1844. Wagner in 1876 states that it is present in most men in the sebaceous glands around the external ear and face. Usually looked upon as harmless, it has been credited with causing impetigo (Lawrence), and inflammation of the Meibomian glands (Hausche and Jores). A similar type of acarus occurs very generally in animals and has been found in cats, dogs, rabbits, rats, goats, swine, and cattle. The demodex mange of dogs and cattle is said to be incurable, owing to the depth into the skin that the parasite penetrates.

Borrel, in France, examined the normal skin of 20 human cases, and found the demodex in 50 per cent. He thought that it was specially numerous in patients with cancer, and described 12 cases of rodent ulcer in which the acarus occurred in very large numbers immediately around the site where the malignant growth started. The parasite was found in six cases of breast cancer out of a total of seven examined, sometimes more than 100 were present in one nipple. Borrel has been a strong adherent of the theory of the parasitic origin of cancer for years, and he has collected many cases of malignant disease, both in man and animals, in which the growth apparently started around the site where some form of parasite had lodged. In the case of the demodex, although he was very careful not to draw conclusions beyond those which the data warranted, he strongly advocated that means should be adopted to rid mankind of this pest. He looked upon the demodex as transmitted by close contact and family relationships, and suggested that its presence would explain the existence of so-called cancer houses and the so-called hereditary nature of cancer.

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[1] Borrel, A., Gastinel, P., and Gorescu, C.: Acariens et Cancers, Annales de l'Institut Pasteur, 1909, xxiii., 97.

Method of Examination.

The method adopted by Borrel consisted in cutting serial sections of the nipple parallel to the surface of the skin. At first we followed this laborious technique; but it has since been modified and is now as follows:—

The breast is brought from the theatre soon after removal. The nipple is cut in half across the centre with scissors and one half put into fixative for microscopic examination. From the other half pieces of the nipple skin are cut about 1 mm. in thickness; the central pieces are taken first, as they contain, as a rule, most of the sebaceous glands. The cut surfaces of the strip are scraped in water on a slide, and the scrapings examined with 2/3rd and 1/6th objectives. The parasites are easily detected and their very distinctive structure leaves no doubt of their identity. In some cases as many as 12 or more are found on the first slide, in other cases only one or two are found in the whole nipple. The acarus has not yet been found by taking scrapings from the surface of the nipple of the living patient.

The Demodex Folliculorum.

The acarus is shown in the figure. It is about 0·3 mm. long, the male being smaller than the female. The length is variable, and much smaller forms are met with when young. It lives head downwards in the sebaceous glands, and is commonly found in pairs, male and female, living together in close apposition. Sometimes as many as 20 parasites are found in one sebaceous follicle. The eggs are oval and are laid in the glands; they hatch out larvæ with only three pairs of legs instead of the four pairs which the adult form possesses. In most of the specimens the acari have not been numerous, and the eggs have been difficult to find.

The parasite protects itself from adverse conditions by burrowing deeply into the glands, and it has frequently been found alive in specimens removed by operation after the skin has been carefully disinfected for surgical reasons with alcoholic iodine or alcoholic picric acid. The acarus shows no tendency to leave the specimen after removal from the body, and it has been found alive eight days later in breasts which have been kept at room temperature and in which autolytic changes have been well advanced.

Septic contamination quickly kills it. The acarus has been often seen in active movement, but attempts to cultivate it outside the body have so far not met with success.

Microscopic Changes.

Borrel stated that the sebaceous glands harbouring this parasite showed signs of chronic inflammation, and that he found it burrowing into the cellular tissues. We have not been able to confirm the latter part of this statement. Marked signs of chronic inflammation around the follicles have often been seen; in other cases, however, they have been entirely absent. Inflammatory changes associated with plugs of debris and bacteria in the orifices of the glands have occasionally been the first changes noted when the acarus has only been found after prolonged search. In a few cases inflamed gland acini have been found in close contact with the deepest parts of the sebaceous glands, almost looking as if a direct transmission of infection had occurred. This appearance has been traced sometimes in the breast quite apart from the nipple. Borrel thought the sebaceous glands increased in numbers owing to the irritating action of the parasites. In the cases recorded here the glands have sometimes been very numerous when no acari could be found at all. On the other hand, in cases where the acari have been very numerous, there have been comparatively few glands.

The Cases Examined.

Sixty-three breast cases have been examined; the details are given in the following table:—

Disease.	No. of cases in which the acarus was—		Total.
	Found.	Not found.	
Carcinoma	26	20	46
Papilloma	2	1	3
Chronic mastitis ..	8	5	13
Fibro-adenoma ..	1	0	1
—	37	26	63

There has been no opportunity of finding the incidence of infection among the general population. Seven normal breasts only have been obtained, and in these the acarus was present in two. Both were post-mortem cases from patients who had died from carcinoma, but in some other region of the body than the breast. The list of cases given in the table includes four males; the acarus was found in three of these, one had carcinoma of the breat, the other two had chronic mastitis. There was no reason to suppose in any of these cases that the acarus was limited to the region of the breast. It has been found on the chest wall, in the axilla, and in a case of epithelioma of the vulva on the mons veneris. The parasites are often so few in number, and there is so little sign of chronic irritation around the site where they are lodged, that it seems to the writers doubtful whether they have any direct bearing on the disease. On the other hand, the site where they live at the orifice of the nipple and their burrowing habits give them every facility to transmit a living virus if this is present.

Experimental Inoculations.

To obtain direct evidence that breast disease is caused by the agency of the *Demodex folliculorum* it would be necessary to produce the disease in animals. With this object emulsions containing the acarus have been inoculated subcutaneously into the breast region of a number of mice and rats.

Emulsions containing the parasite in fairly large numbers were obtained by the method already described, using sterile conditions. Each animal received four to six acari. In all, 47 animals were treated, 36 mice and 11 rats. The results were entirely negative. At the end of three months 22 mice and 11 rats were alive, and at the end of four and a half months 11 mice and 11 rats were alive and well. This method of subcutaneous inoculation does not produce a chronic condition at all comparable with the chronic irritation so often found in the breast ducts in the human subject. To inoculate the breast ducts requires larger animals than those which have been available.

Conclusions.

1. Breast disease in England is often associated with the presence of an acarus which lives at the orifice of the nipple. This acarus apparently is prevalent irrespective of the social class or personal habits of the patient. It lives deeply in the sebaceous glands and is not killed by treatment of the skin with strong antiseptics; it can remain alive for over a week buried in the skin. Any form of preventive measures must, therefore, be long continued and must aim at destroying the acarus when it comes to the surface.

2. It has been suggested by Borrel that this parasite can convey to the breast ducts a living virus which can set up malignant disease. At present there is no evidence to support or to disprove this theory.

ETHYLENE ANÆSTHESIA,

WITH OBSERVATIONS UPON ONE HUNDRED AND TWENTY ADMINISTRATIONS.

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ETHYLENE or olefiant gas is an unsaturated hydrocarbon having the formula C_2H_4. The narcotic action of the gas is said to have been discovered by Simpson and investigated by Nunnelly, of Leeds, but it is doubtful whether these early workers ever anæsthetised patients with it. The recent observation that ethylene dissolved in pure ether alters its anæsthetic properties revived interest in the gas, and its actions have been thoroughly worked out by Luckhardt, Carter and Easson Brown in America.

Preparation.

Until recently it has been impossible to obtain pure commercial ethylene in Great Britain, and most of the gas used in the following cases has been kindly prepared by Dr. W. H. Hurtley, lecturer in chemistry to St. Bartholomew's Hospital. The method of preparation is known as Newth's process, and is briefly as follows: Syrupy phosphoric acid is heated in a round-bottomed flask to drive off water. A thermometer is placed with its bulb in the liquid, and boiling occurs at about 160° C. The heating is continued until the temperature rises to 200° C. At this stage the flask is fitted with a cork carrying (1) the thermometer, (2) a tap-funnel whose stem reaches below the surface of the liquid, and (3) a delivery tube connected to a wash-bottle standing in ice. Ethyl alcohol is then allowed to drop slowly on to the acid from the tap-funnel, the temperature of the mixture is kept at about 220° C. and the ethylene collected over water. This method can be used commercially, and would be comparatively inexpensive, provided that duty-free spirit could be employed. The gas so prepared was compressed at a relatively low pressure (100 lb. per square inch) into ordinary nitrous oxide cylinders by means of an adapted motor-tyre pump. The remainder of the gas was imported from America to ascertain whether there was any appreciable difference in quality. It was found that the smell of the imported ethylene was pungent and resembled that of acetylene, while the other gas had a rather pleasant ethereal odour. At the same time there appeared to be no appreciable difference in the effects of the two gases on patients,

and the American ethylene when examined was shown to have a purity exceeding 99 per cent.

Properties.

The odour of ethylene has already been mentioned and will be referred to again later. The main point of interest to the anæsthetist is the inflammability and explosibility of the gas. Pure ethylene burns with a semi-luminous flame in the same way as hydrogen. A mixture of between 4 per cent. and 15 per cent. ethylene in air explodes with moderate violence in the presence of an electric spark. Mixtures of oxygen and ethylene explode with extreme violence if the oxygen percentage exceeds 40. It should also be observed that in this respect nitrous oxide acts in a similar manner to oxygen, a point to be borne in mind if anæsthesia is induced with nitrous oxide and continued with ethylene. From these considerations it will be seen that the only likelihood of danger from explosion in practical work lies in (1) the application of any type of cautery to the region of the face or mouth if the patient is anæsthetised with ethylene or mixtures of this gas with nitrous oxide or oxygen; (2) in cases where a double-airway endotracheal ethylene-oxygen anæsthesia is being given and the blast of the return airway is directed towards a naked flame, such as that of a steriliser; (3) in passing a tracheal catheter by means of a direct-vision laryngoscope with distal illumination. An imperfect contact or short circuit of the lamp might cause a minute spark, and for this reason the writer has now ceased inducing anæsthesia with ethylene-oxygen if a tracheal catheter is to be passed.

The question of spontaneous explosion must now be considered. Ethylene being an endothermic gas, it was thought possible that under high pressure explosion might occur in a similar way to acetylene. This fear, however, appears to be groundless, as in America thousands of cylinders of ethylene have been compressed to about 60 atmospheres and explosions are unknown. At this pressure, however, ethylene behaves in a curious way. The critical temperature of the gas is given by various authorities as between 10° C. and 13° C. In spite of this, ethylene compressed to 870 lb. per square inch at 18° C. does not behave as a gas, but follows no definite laws of pressure and volume, being apparently in some border-line condition between the gaseous and liquid states.

From these observations it will be seen that if ordinary care is used ethylene is safe, but it should be remembered that were an explosion to occur the consequences would be very different from those following the alarming, but comparatively harmless "ether flare," but will probably involve the death of the patient and serious injuries to the anæsthetist and other occupants of the theatre. One such explosion, involving the death of three persons, has recently occurred in America.

Physiological Action.

Ethylene has an extremely powerful action on certain plants. For example, it was noted 15 years ago by Crocker and Knight that ethylene, in a concentration of 1 to 2,000,000 parts of air, caused open carnations to close. Upon animals and man a concentration of over 75 per cent. acts as an analgesic and anæsthetic. Spectroscopic examination of the blood drawn from patients under ethylene anæsthesia does not reveal any absorption bands, showing that the gas does not combine with the hæmoglobin, but is probably in a state of physical solution in the plasma. On discontinuing the administration the gas is very quickly eliminated, although traces can be detected in the breath for several hours.

The systolic and diastolic blood pressures and the pulse-rate appear to be practically unaffected by ethylene, provided that enough oxygen is given to avoid cyanosis. If this is allowed to develop, the pressures naturally rise. The depth and rate of respiration are also unaltered, provided that means are taken to avoid accumulation of carbon dioxide. Muscular relaxation is a variable factor. All minor operations, except possibly the reduction of dislocations, can be performed under ethylene-oxygen alone, but most abdominal sections require the addition of ether or chloroform. There is no chemical action between these compounds, and the necessary amount of vapour can be added in the anæsthetic bottle of a sight-feed gas and oxygen machine.

To sum up, the general picture of a patient under ethylene-oxygen anæsthesia resembles one of natural sleep with a pink colour, normal pulse-rate and blood pressure, and with shallow regular breathing, the corneal reflex being present.

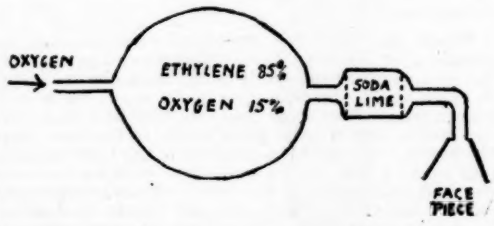
Administration.

Ethylene has been administered in a variety of ways as follows:—

1. *Ethylene and Air*, given with the usual simple gas apparatus. This method is quite satisfactory for short minor operations, such as dental extractions, the opening of abscesses, and the like. In dental cases the nasal method can be employed for the prolongation of anæsthesia in exactly the same way as with nitrous oxide.

2. *Ethylene-oxygen* with partial re-breathing. The writer has employed an ordinary Boyle's sight-feed gas and oxygen machine for this purpose and finds it quite satisfactory. It is wise, however, to check the enthusiasm of the nurse who lights the spirit-lamp on the older patterns of the machine to warm the reducing valves. The great feature of this method is that the majority of patients can be kept anæsthetised indefinitely on a mixture of 80–85 per cent. ethylene and 15–20 per cent. oxygen with no added ether. The result is a patient lying quite still with a pink colour. Most anæsthetists will agree that this is impossible with a pure gas-oxygen. Relaxation varies, but for abdominal cases some added ether is nearly always necessary.

3. *Ethylene-oxygen with Carbon Dioxide Absorption* and complete re-breathing. Since ethylene is exhaled



from the lungs unchanged, it follows that the same gas can be used again. The diagram illustrates the principle of the method. The two-gallon gas-bag contains the ethylene-oxygen mixture, and "to-and-fro" breathing takes place through a metal chamber containing granulated soda-lime to absorb the carbon dioxide. Sufficient oxygen is added to keep the colour pink. In practice a certain amount of leakage occurs and more ethylene must be added at intervals, but even so the method is extremely economical, as only about five gallons of gas are used in half an hour. The soda-lime must be changed when caked, but this does not occur till after four hours' use with a normal-sized filter. The most convenient apparatus to use is a Boyle's machine with the filter interposed between the bag and the face-piece, the stopcock being in the "no valves" position.

4. *Endo-tracheal Ethylene-oxygen.*—The writer has induced anæsthesia on several patients with ethylene-oxygen and then passed a tracheal catheter, continuing with endo-tracheal ethylene-oxygen. As previously

mentioned, although sufficient relaxation can be obtained to pass the catheter easily, the chance of explosion seems to render the method somewhat risky. Anæsthesia can be maintained with pure ethylene-oxygen, provided that the oxygen percentage is not allowed to rise too high, but for abdominal work or in other cases where great relaxation is required, some ether must be added.

Results.

The results obtained in the first 120 administrations of ethylene will now be summarised. The operations included abdominal exploration, amputation of the breast, excision of cysts, glands, ganglia and polypi, incision and drainage of abscesses, suture of tendons, circumcision, tonsillectomy, and dental extractions. The total time of anæsthesia varied between two and 58 minutes, while the age of the patients was from 2 to 62 years.

The average time for the induction of anæsthesia was 1 minute 50 seconds. No case gave rise to any anxiety during operation. Anæsthesia was completely satisfactory in 110 cases with ethylene or ethylene-oxygen only. In five of the remaining patients a little ether had to be added to secure the necessary relaxation. The rest of the unsatisfactory cases were all dental extractions which exceeded the estimated time, a nasal apparatus not being available. If this could have been used there is no reason to suppose that the anæsthesia could not have been extended to enable all the extractions to be completed. The "single-dose" method usually gives about 1¼ minutes anæsthesia, which is longer than with a "straight gas" and rather shorter than with closed ethyl chloride.

After-Effects.

The noticeable lack of after-effects constitutes the chief advantage of ethylene anæsthesia. Out of 120 cases, only ten vomited at all and two of these had some additional ether. Most patients exhibit some aphasia for a few minutes after coming round, but if the time of anæsthesia has not exceeded ten minutes, they can usually walk without assistance three minutes after the face-piece has been removed. All the adult patients were questioned as to the smell, but only two complained at all strongly, the vast majority thinking that they had had nitrous oxide. From personal observation, the odour is distinctly perceptible for the first few breaths, but then becomes unnoticeable, as unconsciousness rapidly supervenes. The odour in the theatre is unusual, but is never strong enough to become a nuisance.

Patients are remarkably fit after ethylene anæsthesia. A good comparison with ethyl chloride was afforded by children having multiple dental extractions. Seventy per cent. of the patients who had had ethyl chloride vomited, and they had to be kept under observation for an average of 35 minutes. None of the children anæsthetised with ethylene vomited (59 cases), and they could be sent home after an average of ten minutes.

Conclusion.

These results agree substantially with the reports of large numbers of cases anæsthetised with ethylene in America, and appear to show that this gas has certain advantages over the other anæsthetics at present in use, especially for minor operations taking a moderate time and which require more than nitrous oxide.

The writer understands that limited quantities of ethylene are now available from Messrs. Coxeter, Pancras-road, N.W. 1. He wishes to express his thanks to Dr. W. H. Hurtley for the preparation of the gas and to Mr. Geoffrey Carte, Mr. T. P. Dunhill, and Mr. S. A. Withers for permission to anæsthetise their cases with ethylene. The majority of the cases cited above were anæsthetised at St. Bartholomew's Hospital and the Queen's Hospital for Children.

Clinical and Laboratory Notes.

TWO CASES OF ACUTE POLIO-ENCEPHALITIS.

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RECENTLY, the two following cases of unusual infectious disease were admitted to the Taunton Joint Isolation Hospital, which seem worthy of record:—

CASE 1.—Male aged 17. Sent in from the local general hospital as a case of encephalitis lethargica.

Condition on Admission.—He had swelling about the throat, difficulty in speaking and swallowing, tonsils enlarged, fauces reddened, temperature normal; he had symptoms of bulbar paralysis and weakness of muscles of right leg. His face was dusky in appearance, and he was in great distress; there was no ankle-clonus, no Babinski sign, and the reflexes were very much diminished. Heart and lungs normal, no implication of the third nerve, and no history of double vision. He had moderate headache, marked retraction of the head, and Kernig's sign plus. He died ten hours after admission from failure of respiration, with a clear mind and no lethargy or mental symptoms.

The *cerebro-spinal fluid* was clear and not under increased pressure. The laboratory report was: Some alteration in the cellular elements; polynuclears in increased proportion. No organisms present; slight globulin reaction. Probably a case of aseptic meningitis.

I was informed by the house surgeon at the general hospital that before admission to the isolation hospital he had marked ankle-clonus, some rise of temperature, no retraction of the head or Kernig's sign, and that the knee-jerks were much increased.

CASE 2.—Male, aged 18, was admitted to the general hospital as a case of infantile paralysis and transferred to the isolation hospital as encephalitis lethargica.

Condition on Admission.—When admitted to the latter institution he had retraction of the head, Kernig's sign, no third nerve implication, no history of double vision, knee-jerks and other reflexes diminished, paralysis of the right arm, and a normal temperature. He also was in great distress with greyness of the face, his speech was normal, but he swallowed with difficulty. He had no mental symptoms or lethargy, and died after 12 hours from failure of respiration and with a clear mind.

The *cerebro-spinal fluid* was clear. The laboratory report was: No globulin reaction, no cellular alteration, no organisms present. Not a case of septic or tuberculous meningitis.

These patients came from different districts and from houses five miles apart and, as far as could be found out, had nothing in common. In the family of Case 2 a sister, aged 15, died in June, 1919, from typical encephalitis lethargica with profound coma. She was seen by me and I reported on the case to the Local Government Board. Since this girl's death this family has removed to another house about a mile away.

In addition to these, my attention was called to a third case which also terminated fatally in the cottage hospital of a town about seven miles away.

The patient was a female, aged 18, with a history of slight head injury a month previously and with a doubtful history of tuberculosis in infancy. She was ill for six days and had headache, some drowsiness and rise of temperature, but no third nerve implication. Her symptoms were much the same as in Case 2, and she, too, died from failure of respiration and with a clear mind. The cerebro-spinal fluid was clear and under some increased pressure, and the report was also indefinite. She was dead when the case was reported to me, so that I had no opportunity of examining her.

Commentary.

During the past 12 months there have been seven or eight cases of encephalitis lethargica in

these three districts. One of these was clearly incorrectly diagnosed; another was a child on a visit who remained for a day or so only and then returned home. The remainder were well-marked cases.

Whilst I ascribed these three cases to a "polio-encephalitis" of some sort I had great difficulty in the differential disgnoses. There were the following essential conditions to be kept in mind: (1) Epidemic cerebro-spinal meningitis; (2) poliomyelitis under various names, as "Heine-Medinische Krankheit," or the Heine-Medin syndrome, polio-encephalo-myelitis, antero-myelitis, epidemic paralysis, &c.; (3) polio-encephalitis; (4) encephalitis lethargica, also known as acute infective ophthalmoplegia, epidemic toxic ophthalmoplegia, epidemic stupor, &c. As each of these four groups was a notifiable infectious disease, returnable to the Ministry of Health, each was presumably a separate entity.

Some 50 epidemics of poliomyelitis have been recorded since 1840, mostly in Scandinavia and the United States of America, and with very few in England; and although there is no essential difference in the classifications given by Medin and by Wickmann, Medin's report alone showed cases which could be described as "polio-encephalitis." Apparently there were none in the New York epidemics, nor were the epidemics followed by sporadic cases with symptoms like those of encephalitis lethargica.

It would seem that Landry's paralysis in an adult is always poliomyelitis and that whilst polio-encephalitis is rare, that rarity would not exclude it from the Heine-Medin group, especially when one remembers how the predominant symptoms of other epidemic diseases vary from epidemic to epidemic. Whether the classification of the Heine-Medin syndrome should be enlarged to include typical cases of encephalitis lethargica seems doubtful; on the other hand, it may possibly be later shown that some of the groups now included with that syndrome should rather be classed with encephalitis lethargica. A careful consideration of the Local Government Report No. 121, on Encephalitis Lethargica, does not help much, and leaves the impression that an attempt was made to mark off a new disease by excluding those cases with symptoms pointing to polio-myelitis. The differentiating factor was permanent extremity paralysis, which in my two cases does not help.

There is clearly a polio-encephalitis, with or without spinal symptoms, of the Heine-Medin group, and a polio-encephalitis without the lethargy of the new disease. Although stupor is present in 80 per cent. of the cases of the latter condition, it is often a late symptom, and hence would be absent in a case rapidly terminating fatally. Besides, the bulk of the cases of polio-encephalitis appear to be fatal in from four to six days. The symptoms obviously depend on the particular parts of the brain and cord implicated. The clinical picture in a given case varies rapidly from day to day, and unless there is time to observe permanent paralysis or definite lethargy, it is clearly impossible, in sporadic cases and apart from an epidemic, to distinguish between the two diseases. Histologically encephalitis lethargica belongs to the class of polio-encephalitic diseases: both are inflammatory in nature, the organisms stated to have been found are similar, and there is no real difference in the cerebro-spinal fluid; in fact, the two reports showed that the specimens varied little, if at all, from the normal. In poliomyelitis there is usually a difference, whilst in encephalitis, as a general rule, there are no appreciable changes, although occasionally changes are found similar to those in the former disease. In any case these two conditions suggest a relationship to one another like that of typhoid to paratyphoid fever. Both are transmitted by carriers, not themselves necessarily ill, and in both the infection is by way of the naso-pharynx.

A CASE OF
TONSILLECTOMY IN A BOY WITH CONGENITAL HEART DISEASE.

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THE following case is interesting on account of its unusual character:—

The patient, a boy aged 15, was suffering from congenital heart disease (apparently a patent foramen ovale), being extremely cyanosed and poorly developed. He had very large tonsils, almost touching in the middle line, with attacks of bleeding from the surface of the tonsils and also from the posterior nasopharynx, discharging ears, and pigeon-chest due to obstructed breathing. I first saw him two years ago and suggested operation, not only for the improvement of his breathing and the ear discharge, but also as his only salvation, as repeated attacks of tonsillitis were making his life precarious. Since then he saw two or three throat specialists, who, owing to his heart condition, advised against operation. I saw him again in the middle of August. His condition was much worse; he had repeated attacks of bleeding and colds. The bleedings were due to general oozing from the surface of the tonsils and pharynx. Gargling with liq. fer. perchlor. and adrenalin easily stopped it.

Operation was again advised as his one chance, and was at once agreed to.

Operation.—The operation took place on Sept. 4th, 1924. Anæsthetic A.C.E. (very light). The patient took the anæsthetic very well, and the tonsils were enucleated and adenoids scraped. He bled moderately during and soon after the operation and vomited blood once. There was no bleeding between 8.15 and 10 A.M. At 10 A.M. sharp bleeding commenced from mouth and nose, and he vomited 6 oz. of blood. Adrenalin swabbing stopped the bleeding temporarily. There were no bleeding points to be tied. At 10.30 A.M. he bled again, and vomited half a pint of blood. At 11 A.M. a gargle of liq. fer. perchlor., 1 drachm to the ounce of water, stopped the bleeding at once. The fauces were examined, and there was no bleeding whatever. Clots were formed. Gargles were continued half-hourly. From this time on no bleeding took place from the seat of the operation. At noon he vomited half a pint of blood, which was repeated at 2 P.M. and again at 3.30 P.M. in large quantities. Pulse 116. By now he began passing pure blood per rectum. There was no bleeding from the naso-pharynx, and I came to the conclusion that the bleeding was due to oozing from the mucosa of the stomach and intestinal tract. At 3.30 I gave him ℥iv. of adrenalin hypodermically, and at 4 P.M. he vomited a large quantity of blood. Things were looking very alarming, and I decided to try hypodermically an injection of coagulen Ciba. I gave him at 4 P.M. 5 c.cm., and the patient was allowed ice to suck. He slept until 7.30 P.M., when he vomited half a pint of blood and passed per rectum a similar quantity. Saline given per rectum was returned mixed with blood. I repeated coagulen Ciba 15 c.cm. hypodermically, and ten minutes later ¼ gr. of morphine. The effects were most gratifying. He slept soon afterwards, except for sips of water, until noon the next day.

Since then he made an uninterrupted recovery. He never vomited or bled by mouth or rectum after the second coagulen injection. The following night he had another ¼ gr. of morphine. He began to take fluids freely, and by the 6th his pulse fell to 92. On the 10th he was up and about in the room. His breathing is easy, he sleeps without snoring, and his ears are drying up. His colour is better, his heart regular, and his pulse normal.

Jan. 9th, 1925: The boy is now going to school; he has had no "cold" since the operation. He is gaining weight and looks much healthier.

Remarks.

The unusual type of hæmorrhage I attribute to the poor coagulability of the blood due to the mixing of venous with arterial blood. I had not before seen congenital heart disease or organic valvular disease in young people give trouble under careful anæsthesia. I was also struck by the almost magical action of the coagulen, and intend to try it again in any future case of intractable hæmorrhage. I propose also to put the patient on calcium lactate to prevent his tendency to bleed.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

JOINT SECTIONS OF MEDICINE AND ELECTRO-THERAPEUTICS.

A JOINT meeting of these Sections took place on Jan. 16th, Dr. ROBERT HUTCHISON, President of the Section of Medicine, presiding, supported by Dr. STANLEY MELVILLE, President of the Section of Electro-therapeutics.

"ELECTRONIC REACTIONS."

Sir THOMAS HORDER, on behalf of himself, of Dr. C. B. HEALD, Colonel H. P. T. LEFROY, Mr. WHATELY SMITH, and Mr. M. D. HART, made a communication upon this subject. In his prefatory remarks Sir Thomas Horder thanked the joint sections for a liberal-minded decision to accept the communication which he described as "concerned with the procedure and results of an investigation of which the object was to determine, as conclusively as might be practicable, whether there be any valid basis for the claims put forward in respect of the so-called electronic reactions of Abrams (E.R.A.) or of any analogous technique allied thereto or developed therefrom." Other introductory points made by Sir Thomas Horder were, that the inquiry which he was now reporting upon had been confined exclusively to the "reflexophone" apparatus of Abrams and to the "emanometer" of Boyd, the latter being, he explained, not a variation of the apparatus of Abrams, but "a design de novo based on a different conception of the phenomena involved." He wished to thank Dr. W. E. Boyd, of Glasgow, for giving the fullest facilities for investigation, and, in referring to Dr. Boyd's work on the relation of certain electro-physical phenomena of homœopathy in special reference to the E.R.A., he wished for himself and his co-investigators specifically to emphasise that no recognition of homœopathic doctrines was implied as regards either fundamental principles or clinical methods.

Previous Critical Views.

Sir Thomas Horder then demonstrated upon the screen the emanometer of Boyd and the reflexophone of Abrams, the claims of Abrams being described as of a character to ensure reception by medical and lay critics alike with scepticism tantamount to hostility. He said that the essential features of the Abrams diagnostic technique were substantially as follows. "The specimen, usually a drop of blood on filter-paper, is placed in a box called the 'dynamizer' containing three electrodes; of these the two lower, on which the specimen rests, are electrically connected to earth, while the third, which forms part of the lid, is connected in series with three resistance boxes. The first of these is called the 'amplifier,' while the second and third are known as 'reflexophones.' From the second reflexophone a wire passes to another electrode placed in close juxtaposition with the forehead of a normal, healthy person standing on earthed plates facing west, and known as the 'subject' or 'medium.' Certain areas on the abdominal wall of this 'subject' are then percussed by the operator, and for each such area the first reflexophone is adjusted until the normal percussion note changes to 'dull'; the readings of the reflexophone corresponding to such changes of note are known as 'rates,' and these, taken in conjunction with the position of the abdominal area under percussion, are interpreted in terms of the pathological or other characteristics of the patient from whom the specimen was obtained. The 'intensity' of the disease is estimated by altering the second reflexophone until the reaction disappears and the percussion note resumes its normal character. The apparatus, as re-designed by Dr. Boyd and named the 'emanometer,' differs in several respects from that described above, although it equally involves—at present—the use as a detector of a normal human subject standing on earthed plates facing west, or, more strictly, at right angles to the horizontal component of the local magnetic field. A receiving plate is connected through a variable inductance and a variable condenser in series therewith to an electrode strapped to the subject's forehead. The specimen—whether chemical or physiological—is carried in a holder, of which one side is earthed, and this holder may be moved nearer to or further from the receiving plate of the apparatus in order to measure the intensity of the reactions. Tuning is effected by varying the value of the inductance instead of by adjusting the first reflexophone or resistance box, as in the Abrams technique, but the processes of abdominal percussion are substantially identical in the two methods. An outstanding feature of the Boyd apparatus—as contrasted with that of Abrams—is the incorporation of earthed metallic screens which are claimed to eliminate contamination from external sources; these screens are made either of sheet copper or of copper gauze having a mesh of about 30 to the inch."

Sir Thomas Horder continued as follows: "A certain number of practitioners obtained, by sending specimens to Abrams for diagnosis, results which persuaded them that some at least of his claims were not wholly unfounded, and the technique accordingly spread until at the present time there are, it would appear, many hundreds of exponents of his diagnostic and curative methods in the United States of America alone. It is true that of these adherents all too large a proportion are of the variety known as 'advertising specialists,' but there has always been, and still is, a certain reputable minority who, whether they have adhered to the original Abrams apparatus, or like Dr. Boyd, have devised conspicuous modifications, have sought patiently and sincerely to elucidate the problems involved and to eradicate such errors as they have encountered. This fact, taken in conjunction with the importance of the issues at stake, should have sufficed to ensure for the technique a judicial and painstaking investigation and to save it from the bigoted and a priori condemnation in which, actually, critics almost exclusively indulged, and of which alone the majority appear capable. It would be idle to deny that Dr. Abrams constantly put forward the most startling claims on the slenderest evidence; that he persistently evaded test conditions; that he expressed himself in a jargon characteristic of charlatanry; or that he had no scruple in selling or leasing to others, at high charges, apparatus crudely constructed and at best imperfectly developed. But all this, although indicating an unfortunate lack both of scientific method and of scientific conscience, is no justification of the manner in which the subject has been handled by critics. For the possibility should not have been forgotten that Dr. Abrams might, in fact, have lighted upon a discovery of genuine scientific importance and yet have elected to exploit it to the utmost for immediate advantage in preference to entering upon a prolonged, laborious, and financially unprofitable research. The sequence of events in the present case has been closely similar to the case of Mesmer, and it is at least certain that the methods of criticism hitherto employed have served mainly to create an atmosphere of bitterness and suspicion without contributing in any proportionate degree to the settlement of the issue. It is, indeed, not at all surprising that the ineptitude displayed has so alienated the sympathies of electronic practitioners that they have frequently refused to submit to the 'tests'—so-called—which have been suggested, although on the other hand their omission—speaking generally—to recognise the limitations of their methods or to suggest fair trials which they might be capable of satisfying is greatly to be regretted."

Sir Thomas Horder then briefly referred to the critical attitude with which various papers in this country and the United States received the claims of Abrams, and indicated that an investigation by the *Scientific American*, having been conducted by a committee on sound lines, had been taken as finally

adverse. The verdict of the committee was, he said, to find that the claims advanced on behalf of E.R.A. and electronic practice in general were not substantiated and had no basis in fact, and that the so-called electronic reactions did not occur and the treatments were without value.

The Present Investigations.

Sir Thomas Horder then explained the genesis of the new investigations which originated in the view of Dr. Heald, medical adviser to the Director of Civil Aviation, that, if there should be anything in the claims of the Abrams school an inquiry might with advantage be conducted on lines similar to those of a number of investigations which have been initiated in the Department of Civil Aviation during the past six years. Sir Sefton Brancker, Director of Civil Aviation, authorised a preliminary investigation, the result of which was that the Air Ministry, though maintaining a cordial interest, did not feel disposed to conduct an official research or to refer the matter for that purpose to the Medical Research Council. Dr. Heald then pursued his investigations as a matter of personal interest, when he found that much specialised knowledge outside the scope of normal practice made it necessary to enlist the services of Colonel Lefroy, head of wireless research at the Air Ministry, and Mr. Hart and Mr. Whately Smith, who are engaged in physical research work on behalf of the War Office and Air Ministry respectively. Sir Thomas Horder said that he had consented to act as chairman of a committee thus constituted. The work of that committee he defined as an inquiry under two headings, the first, purely physical, being the question whether the blood and secretions of a patient give out any form of energy which can be detected and measured by known physical means; the second being, what relation does any tuned and recorded "electronic energy" bear to known pathological conditions? He gave an account of the prima facie evidence which persuaded the investigators that the claims of electronic practitioners were not necessarily all ill-founded, but pointed out that a second phase was reached at the investigations by Dr. Boyd and Mr. Whately Smith in June of 1924.[1]

Sir Thomas Horder then selected three cases of special interest as being of a sufficiently concrete nature to admit of reasonably succinct description, the purport being to show that the results obtained could not reasonably be attributed to pure chance, to ingenious guesswork, or to deception. Four series of tests were carried out, the results of which were summarised as follows: In the first series, 12 trials were successful and 8 were failures; in the second, 10 were successful and 2 were failures; in the third, 8 successful and 4 failures; in the fourth, 16 successful and 4 failures. Total: 46 successes and 18 failures out of 64 trials. It is easy to calculate the chances of these results being accidental, for if it is assumed —which the speaker found legitimate—that the demonstrator could not know by sight or by hearing the position of the screen, it is clear that his chance of giving by guesswork a correct answer in any given case is one-half. "Actually the chances are," said the speaker, "approximately as follows:—First series: 1 in 8 or 7 to 1 against. Second series: 1 in 62 or 61 to 1 against. Third series: 1 in 8 or 7 to 1 against. Fourth series: 1 in 216 or 215 to 1 against. Or, if the whole set of 64 trials be taken collectively, the chance of 46 successes or more being obtained by accident is about 1 in 3038 or odds of 3037 to 1 against."

Nature of the Problem.

"As evidence began to accumulate," Sir Thomas Horder continued, "the problem of how best to deal with the situation became increasingly acute. It is easy to condemn a novel and somewhat fantastic technique on a priori grounds, and it is not difficult to establish a new discovery—even in the face of hostile criticism—if its phenomena can be easily reproduced and explained in terms of accepted scientific principles. But if in addition to their strangeness the phenomena be erratic and difficult to demonstrate and if their causes be in a high degree obscure, then special precautions must be taken in order to ensure a convincing outcome for the investigation. This was essentially the position which confronted the present investigators, and it will be desirable to give a few words in explanation of the reasons which determined their plan of action. The study of such phenomena as the so-called 'electronic reactions,' here considered, falls naturally into three distinct phases or aspects which may be referred to as demonstration, explanation, and interpretation respectively. In other words, there arises first the question of whether the phenomena under consideration occur at all; second, that of why they occur; and third, that of what significance they may possess. Now, the first aspect is of paramount importance in the earlier stages of an investigation of this kind; for provided it be shown beyond reasonable doubt that new phenomena exist there is not likely, in these days, to be any difficulty in ensuring an adequate study of their causes and their significance. But although this be true, there is no doubt that a demonstration supported by a reasonable explanation is likely to be more convincing and more readily accepted than a bare asseveration of facts which, however well these may be evidenced, must stand alone on their own merits. It was accordingly decided to conduct, in the first instance, a series of essentially physical experiments in order to determine whether the 'reactions' (i.e., the changes in the percussion note and the concomitant effects apparent only to the operator) were accompanied by any changes (e.g., in the electrical condition of the skin) which could be detected by physical apparatus of an ordinary type. And it was decided also to leave temporarily on one side all questions of the manner or degree in which the reactions, if any, might be correlated with disease or with any other physiological conditions of the persons from whom specimens might have been taken. It was thought that some relatively gross effects, similar, for example, to the change in skin resistance associated with the psycho-galvanic reflex, might be discovered, and that these would not only enable the existence of the phenomena to be demonstrated beyond cavil, but would also point the way towards the elucidation of their origin. Even in the event of experiments on these lines yielding negative results, the labour involved would not, it was decided, have been wasted; for if the reality of the phenomena were to be subsequently established a good deal of ground would have been cleared while, in the alternative case, it would not be possible for the 'electronists' to complain that any reasonable line of inquiry had been overlooked."

At this point the services of Mr. H. StG. Anson were requisitioned. This observer, said the speaker, was recommended by Faraday House as being exceptionally well qualified to undertake original work in experimental physics, and conducted experiments partly in London and partly with Dr. Boyd in Glasgow, over a period of some five months. He attempted to obtain instrumental evidence of some change in the electrical condition of the patient's skin concomitant to the variation of the percussion note and to obtain graphic records of the acoustical phenomena. Much of the work remained abortive, and in view of the negative results obtained

Crucial Tests

were embarked upon. Sir Thomas Horder continued:—

"In view of these considerations, it was decided to rely exclusively on tests of such a character that the value of the results obtained could be unequivocally computed by mathematical methods and to persevere with a series of such tests until it became apparent that their general tendency was either towards results

[1] Mr. Whately Smith's communication formed Appendix I. to the Report.

reasonably attributable to chance alone or else towards figures which could not rationally be ascribed to such causes.

The first test of this kind was carried out in London in May, 1924, with the coöperation of Dr. W. R. McCrae, assisted by Dr. Boyd. It took the form of an attempt to separate correctly 20 pairs of specimens of sputa taken from two patients chosen and approved by Dr. McCrae. Twenty specimens were taken from each patient by Dr. Heald and Mr. Whately Smith and were arranged by them in pairs and numbered according to an arbitrary key. Each pair contained one specimen from each patient, but there was nothing to indicate which was which. Control specimens were taken by Dr. McCrae. The outcome of the test was unfavourable to the technique, for of the results returned by the exponents 11 only were correct, while nine were wrong; which is just the kind of result which would be expected if chance alone were operative. In a memorandum addressed to the investigators, Dr. Boyd ascribed this failure to two main causes—namely, first that the screening arrangements then available at Dr. McCrae's laboratory were insufficient to ensure complete freedom from 'contamination,' and second, that the time required for examining, checking, and re-checking 40 specimens was so great that many of them became stale before they could be dealt with—a tendency liable to be aggravated by the necessity for avoiding undue fatigue on the part of operator and subject. He also expressed a desire that further tests of a slightly different character, but equally conforming to the requirements of the investigators, should be carried out in his own laboratory at Glasgow. To this suggestion the investigators willingly agreed, and on June 6th, 1924, Mr. Whately Smith visited Glasgow for the purpose. His full report is given in Appendix I., and the following quotation and abbreviated account of the tests is given here merely to show the kind of results obtained and the type of procedure adopted.

The first test consisted in discrimination between two apparently identical substances which were presented by the experimenter (Mr. Whately Smith) in such a way as to be indistinguishable by visual or other normal methods. Of 25 successive trials all were successful; the chance of this result being obtained by accident is 1 in 33,554,432.

Mr. Whately Smith's full account of this test runs as follows: 'The laboratory measures about 12 ft. by 6 ft. and is completely "screened" throughout as a precaution against radiation from sources other than the specimen under test; the floor is made of copper sheets, while the walls and door are covered with thirty-mesh copper gauze, all such surfaces being in metallic contact. Gauze screens are disposed about the room in various positions in such a way as to reduce the chances of interference by reflection to a minimum. In the end wall remote from the door is a window in which copper gauze takes the place of glass and which is provided with a hatch, about 12 in. wide by 18 in. high, fitted with a sliding gauze panel which can be raised or lowered by means of a chain and pulleys. Just inside this hatch is a narrow shelf on which test substances may be placed. This hatch communicates with an outer office in which drugs, papers, and other stores are kept, and it was from here that I conducted all tests, inserting specimens through the hatch as was required. After inspecting the laboratory and apparatus, the first test was attempted. From a group of about a dozen sterilised bottles and corks I selected two closely similar examples of each. One bottle was filled to a depth of about ¼ in. with a white granular substance believed to be "active," the other to an equal depth with a substance of identically similar appearance alleged to be "neutral." The corks were inscribed "sulphur 10 m." and "blank," respectively, in small characters. I satisfied myself by personal trial that it was utterly impossible for either the "operator" (Colin Campbell) or the "subject" (James Watson)—two Gallowgate boys—to distinguish the bottle visually when placed in position on the shelf just inside the hatch. This was due to (*a*) the very dim light illuminating the bottles when in position; (*b*) the several thicknesses of copper gauze which in each case obscured the view; and (*c*) the close similarity of the bottles themselves. Dr. Boyd, Miss C. (his secretary), and myself then withdrew to the outer office and I inserted the two bottles "S" and "B" alternately through the hatch until the operator professed himself as satisfied with the tuning and as prepared to discriminate between the two substances. I then conducted a test consisting of 25 trials. For each trial I raised the sliding panel of the hatch, inserted a bottle, dropped the hatch and waited for the operator to say whether the reaction obtained was "dull" (corresponding to the "active" substance) or "clear" (corresponding to the "neutral" substance). The decision was practically always given within a second of dropping the panel, and on several occasions even before I had fully withdrawn my hand; I found it, in fact, difficult to keep pace with the operator. While this was going on, Dr. Boyd and Miss C. were, for the greater part of the time, just outside the room in which I was working, but continuously within sight. I was very careful to vary the order in which I presented the bottles and also to shuffle them frequently, so that no possible observation of my movements by operator or subject could furnish any clue as to which bottle would next be presented. After trials 8, 10, 12, 16, and 19, the operator asked, and was allowed, to check the two substances—that is to say, first the one and then the other was presented, and he was told which was which. After trial 10 the subject went out and washed in order to remove possible contamination.'

"The second and third tests," continued Sir Thomas Horder, "involved the selection and identification, in each case, of one specific substance from among a number of others; both were completely successful, and the chances of their results being obtained by accident were respectively 1 in 180 and 1 in 7776. These tests, like all the others, were conducted under conditions of control which appeared to be perfect. The fourth test was a repetition of the first. The operator gave 18 correct replies in 20 trials, and it seems probable that the two errors were due to faulty manipulation by the experimenter. But even if this be ignored, the chance of the actual result being obtained by accident is no more than 1 in 5518.

The fifth and last test was a screening experiment conducted on much the same lines as that already mentioned in an earlier section. Of 16 trials all were successful; the chance of this being due to accident or guesswork is 1 in 65,536. It was quite clear from these figures that the results obtained, whatever their true origin, could not reasonably be ascribed to the operation of chance alone. The only alternative to accepting the apparent phenomena as genuine was to assume either that Mr. Whately Smith's report was grossly inaccurate or else that he himself had been deceived by trickery—possibly pathological—on the part of Dr. Boyd or his assistant.[2] Both these possibilities appeared to the investigators to be exceedingly remote. It was, however, represented that an issue so important as this should not be allowed to depend on the unsupported testimony of any single observer, and the desirability of conducting a repetition of the tests described in order to confirm or refute these results as conclusively as possible was strongly urged. It was further pointed out that although the other investigators could deal adequately with the question of accurate reporting, it would be advisable to enlist expert assistance with respect to the possibility of fraud on the ground that no one who does not possess specialised knowledge of a high order is competent to express an authoritative opinion on such matters.

[2] It is desired specifically to emphasise the fact that at no time has there been the smallest suspicion or appearance of *mala fides* on the part of Dr. Boyd or any of his associates. The precautions taken were adopted purely as a matter of principle and to anticipate possible criticism.

The investigators accordingly approached Mr. E. J. Dingwall, M.A., and invited his coöperation in this aspect of the work. Mr. Dingwall is research officer to the Society for Psychical Research and has made a special study of the methods of deception and prestidigitatory technique associated with such matters as spurious 'clairvoyance,' 'billet reading,' 'spirit photography' and similar performances in which chicanery is frequently encountered and of all of which he possesses a world-wide experience. In the opinion of the investigators he represented the highest available authority on the subject, and they considered that although, strictly speaking, the only way of excluding trickery absolutely would be to repeat the tests in person using specially constructed apparatus and independent subjects; yet if an expert of Mr. Dingwall's calibre failed to detect any suspicious indication, they need feel no further uneasiness on this score, especially in view of the considerable bulk of collateral evidence with which they were already acquainted. Mr. Dingwall kindly consented to act as consultant in this matter and in due course accompanied Sir Thomas Horder, Dr. Heald, and Mr. Whately Smith to Glasgow on August 29th, 1924.

The tests conducted were substantially identical with those performed by Mr. Whately Smith in the course of his earlier visit, and the degree of success attained by Dr. Boyd was not less impressive.[3] Mr. Dingwall carefully noted the arrangements and procedure and made certain suggestions as regards screening, &c., all of which were duly carried out without reacting in any way adversely on the success of the tests employed. It would therefore appear that, subject only to the theoretical reservation made above, all possibility of deception may safely be regarded as eliminated. The other investigators were entirely satisfied with the conditions of the tests and demonstrations given, and formed the opinion that no more convincing exposition of the reality of the phenomena could reasonably be desired.

Conclusions.

In view of the general considerations and concrete evidence cited in this paper, the signatories consider that the following conclusions are justified: (1) That certain substances, when placed in proper relation to the emanometer of Boyd, produce, beyond any reasonable doubt, changes in the abdominal wall of 'the subject' of a kind which may be detected by percussion. This is tantamount to the statement that the fundamental proposition underlying, in common, the original and certain other forms of apparatus devised for the purpose of eliciting the so-called electronic reactions of Abrams, is established to a very high degree of probability. (2) That no evidence justifying this deduction is yet available from the work of those who practise with the apparatus as designed by Abrams himself. (3) That the phenomena appear to be extremely elusive, and highly susceptible to interference, so that in order to obtain reliable results it is necessary to take the most elaborate precautions, particularly as regards the elimination of effects due to irrelevant objects. (4) That it would be premature at the present time even to hazard in the most tentative manner any hypothesis as to the physical basis of the phenomena here described.

It is impossible to emphasise too strongly that nothing in this communication is to be taken as implying that any correlation of those changes in the abdominal wall, referred to in conclusion (1), with pathological conditions has yet been shown, or a fortiori that any justification—physical, pathological, nosological, or clinical—exists for the direct use of either the Abrams or Boyd apparatus in diagnosis or treatment.

Bearing of the Conclusions upon Medical Practice.

Seeing that the electronic reactions of Abrams had their inception in the field of medicine, this communication will scarcely be complete without a reference to the question which will immediately be asked by many who read it: 'What relevancy have the facts now demonstrated to the diagnosis and treatment of disease?' The electronic practitioner will probably answer, 'A great deal'; though he may protest that the demonstration has been entirely redundant; or, less ungracious, he may accept the demonstration as merely helping to establish further the claims he has already made. But in reality the answer must clearly be that the conclusions in this communication, as they now stand, are not in the slightest degree pertinent to the diagnosis or treatment of disease in any practical sense. That is not to say that they may not possess all sorts of potential bearings upon both of these things. But until the research is taken much further, and until either the explanation, or the significance, of the facts recorded shall be forthcoming, the application of the communication in the field of medicine is nil. At present there is no known correlation between the phenomena described and the fundamental facts of pathology, so that the value of this communication to the practising physician can only be negative.

As already stated, the present investigators have concerned themselves solely with the establishment, to their satisfaction, of certain basic facts. In view of the urgent need of an answer to the question 'Does anything happen?' they are satisfied for the moment with being able to say in effect, 'Something does happen.' Both the explanation and the application of the facts established await further investigation. Which of these will come before the other it is impossible to say, but until one of them arrives the mere statement of the phenomena here described gives no sort of sanction to any practitioner for using the Abrams method in practice. He may, of course, find a legitimate sanction elsewhere; for example, he may show results so consistently good as to justify him in continuing to use the Abrams apparatus in his daily work. But there is no evidence that even the most adept exponent obtains results so consistent as to justify him in doing more than experiment privately with the method. The present investigation clearly suggests one reason, and in itself a sufficient reason, why the electronist's[4] results cannot but be inconsistent—namely, the absolute necessity for efficient screening as proved by Boyd. That it has not been found by electronists generally that such screening is imperative in order to eliminate errors, is in itself a damning proof that the haste with which the method has been carried into the consulting room has prevented any proper investigation of its limitations or of its potentialities. It seems probable that such developments as may take place on the clinical side are most likely to proceed from the methods initiated by Dr. Boyd, and still in process of elaboration by him.

By the term 'consistent results' is meant not the conformity of the electronist's diagnosis with the clinical and pathological facts of the case—concerning which reference will be made later—but some reasonable degree of conformity as between the results obtained by different electronists working upon the same material, and as between the results obtained at different séances held by the same electronist, equally working with the same material. But this reasonable degree of conformity has been conspicuously absent in both cases. In the various efforts made by individual members of the present Committee to obtain evidence of 'something happening' by submitting tests of a simple kind to electronists willing to coöperate in this fashion—tests which it has not been thought necessary to specify in detail in this communication—lack of consistency has been very striking. On more than one occasion the electronist has admitted the discrepancies in his own results, and has on this account considered them unreliable and therefore to be disregarded.

There are in the hands of the committee details of experiments, carefully devised with a view to testing consistency of results, and submitted to exponents

[3] A full account, said the speaker, is given in Appendix II.

[4] This word is exclusively used, said the speaker, to refer to those who rely upon the apparatus and technique of Abrams.

of the Abrams method but with conspicuous failure. All account of these experiments has been omitted from this communication at the express request of the practitioner who was chiefly concerned pending further research. These belated misgivings may have been prompted by the knowledge of the imminence of a report of experiments carried out in such a way as to yield unimpeachable results. Here was an opportunity for some electronist, from whom the saving grace of the scientific spirit has not wholly departed, to come forward and acknowledge publicly the glaring inconsistencies which inevitably and constantly face him in his daily practice. But the opportunity has been missed. To turn king's evidence is never popular and oft-times unprofitable.

When electronists have been asked for an explanation of such inconsistencies as those referred to above they have sometimes attributed them to lack of expertness in their use of the methods and sometimes to new and startling discoveries as regards fallacies of dimensions so large that their very existence would seem, to any unbiased mind, to throw the whole thing back into the melting pot. But neither the modesty which may be supposed to dictate the first explanation, nor the fallacies referred to in the second, would appear to induce any such hesitation in actual practice. The practising electronist is not in the habit of prefacing his diagnosis by declarations of his own lack of skill, nor by any reference to such confusing facts as, for example, that unknown factors cause the same 'reaction' to be given by a carcinoma of the œsophagus and by pulmonary tuberculosis, or by simple gastric ulcer and by cancer of the stomach. No doubt any such prefaces, if systematically adopted, would quickly dispose of electronic practice altogether! It is obvious, therefore, that there is, at present, no proper sanction for the use of the electronic reactions of Abrams on the ground of consistency of results, whether as between different workers or as between the results obtained by the same worker at different times. But even supposing that such glaring discrepancies can be eliminated by proper attention to technical points such as the screening which Boyd finds so essential, and by the substitution of the Boyd apparatus for that of Abrams, sanction will still be lacking so long as there exists no demonstrable correspondence between the 'reactions' found and known pathological states. For patients do not suffer from 'reactions'; they suffer from anatomical and physiological disturbances. If it should be claimed by the electronist that the establishment as criteria of his 'reactions' is of greater moment to the patient than is the recognition of tissue changes and of the disfunctions of organs, then the onus lies with the electronist of stating adequate reason why the whole criteria of disease, as built up by the sciences of morbid anatomy and morbid physiology, should be revolutionised in this manner. This onus has never been accepted.

There is one other thing which may justly be regarded as a condemnation of electronic practice; electronists have been hard at work for some ten years; they have 'diagnosed' and 'treated' thousands of patients; yet no contribution to pathology, which is the bed-rock of medicine, has been made by any of them. Surely this is a significant fact, when it is remembered how epoch-making are the claims made on behalf of E.R.A.

To sum up. The conclusions arrived at in this communication leave the position of the practising electronist as scientifically unsound and as ethically unjustified as it was before. They give no sanction for the use of E.R.A. in the diagnosis or in the treatment of disease. Nor does there appear to be any other sanction for this kind of practice at the present time."

The PRESIDENT, after thanking Sir Thomas Horder and his colleagues for the report, put it to the vote of the meeting whether there should be a discussion upon it now or later, when the meeting decided against each alternative.

SECTIONS OF PSYCHIATRY, NEUROLOGY, EPIDEMIOLOGY, AND DISEASES OF CHILDREN.

A COMBINED meeting of these Sections of the Royal Society of Medicine was held on Jan. 13th, Dr. R. H. COLE, Vice-President of the Section of Psychiatry, in the chair.

Prof. EDWIN BRAMWELL opened a discussion on the

MENTAL SEQUELÆ OF ENCEPHALITIS LETHARGICA.

He said that there had been considerable modifications in our views of this disease since the early cases were met with; the condition was now known to be much more varied and serious, with an onset that might be insidious and a course slowly progressive, remissions occurring months or years after apparent "recovery." It was difficult to draw the line between symptoms and sequelæ. While mental symptoms might predominate they were rarely if ever pathognomonic. Those which had impressed him most in adults were slow cerebration, mental fatigue, defective application and lack of interest in affairs. Recent memory impairment, while striking in one or two cases, was not a well-marked symptom on the whole; patients were usually unable to recall the early stages of their illness, but that was all. Great depression was unusual; there had been in his practice no cases of suicide, though two of his patients had spoken of it vaguely; usually they were complacent and did not worry over their condition. As an example of a common sequela, he cited a lawyer, previously a noted wit and after-dinner speaker, who completely lost his powers of repartee and his ability to tackle any new problem outside the routine of his work. This lack of spontaneous activity was characteristic; there seemed to be a general process of levelling down, the striking features of the individuality being lost. While disorientation and confusion were common at the outset, occasionally amounting to mania, and anxiety states might supervene on the failure to return to normal life, true psychoses were rare.

Encephalitis in Children.

In children Prof. Bramwell had met much the same phenomena, with the distinctions of a frequent failure on the moral side and a marked disturbance of sleep rhythm, the children being extremely restless at night. They lost the capacity for learning, although retaining the knowledge acquired before the illness. They lost interest in games, became careless about clothing and cleanliness, irritable, mischievous, destructive, dirty, cruel, obscene, untruthful, dishonest. Such changes in disposition were not commonly met with in the adult. While the mental symptoms were not generally adequate for a diagnosis, the history was usually sufficiently suggestive. A story of never having been well since an attack of "influenza" would be given, an influenza in which there had been no catarrhal symptoms and which had not spread to other members of the household; the patient would be said to have been drowsy or sleepless, with noisy respiration, so-called "chorea" or jerky movements, double vision for a few days perhaps, or an onset with an agonising pain for which no satisfactory reason could be assigned. The motor sequelæ might be very varied: Parkinsonian syndrome, some want of mobility of the face, some stiffness of trunk in turning, an unnatural pose of arm or hand, tremors and anomalous movements of all kinds would suggest the possibility of encephalitis lethargica.

Prof. ARTHUR HALL dealt with the subject from the aspect of the child patient only, these constituting, in his experience, some 40 per cent. of the cases. He pointed out that from this point of view the disease presented us with an entirely new picture, calling for new measures. The toxin selected those upper and upper-middle regions of the central nervous system which are not well-organised until adult life, and the damage to them produced a clinical picture which we had previously associated with adults rather than

with children. We had not been accustomed to observe sleeplessness for weeks on end in a young child, a case of paralysis agitans under 40, or homicide, suicide, and hooliganism in children. The main clinical aspect might be positive or negative. If the positive symptoms predominated there was tremendous feeling of fitness—euphoria; there might be continuous talkativeness, or the child be unmanageable and destructive. Delirium, if present, centred around the schoolwork or games, or something seen at the "pictures." The previously shy child would become bold and cheeky. These phenomena might be absent altogether or last for a few days, then giving place to death, or to a lethargic, drowsy, stupid condition. Prof. Hall compared these alternating effects to those of alcohol.

The Chronic Phases in Children.

The chronic phases Prof. Hall divided into four groups: —

1. The *Idiot.*—This presented no new problem, the higher centres were destroyed and the child irreclaimable. This type was only found if the onset had been in the first five years of life.

2. The *Parkinsonian* type, usually occurring after the tenth year. The mental defect underlying this was very hard to estimate because of the bodily disability. Prof. Hall thought that the greater the degree of pure Parkinsonism the less would be the mental defect found.

3. The *Apache* type.—This tendency was usually unmasked quite suddenly and unexpectedly in previously clever and good children. They became aggressive, quarrelsome, untruthful, dirty, and dishonest, and might commit homicide or suicide. Their number was not great, though they naturally called attention to themselves and were liable to exaggeration. They were mostly boys.

4. The *Difficult* or the "*Super-difficult*" child.—These formed the great majority, the borderline between them and the apache being ill-defined, and those cases lying near the border being peculiarly hard to deal with.

Prof. Hall showed a chart of the sleep hours of such a case, which manifested clearly the restlessness and activity of the night hours, the child falling asleep in the early morning and sleeping on long enough through the day to get the adequate amount of rest. He described the mental condition as one of asthenia, with lack of concentration and effort, and failure of the emotions, thus leading to a failure of parental control. The management of such a child might be compared to the riding of a half-broken colt with the reins suddenly cut. That they were amenable to really capable control was shown by the improvement in hospitals and country homes, and in the hands of competent parents. Any excitement tended to cause relapse. In regard to treatment, two rules could be enunciated: first, the community must be protected from the apache; and secondly, the difficult child must be saved from becoming an apache. For the latter, institutional treatment should be avoided, the child being given plenty of fresh air and good food, with organised play and exercise, while the mental training was very carefully graduated and supervised.

Encephalitis Lethargica and Intelligence.

Dr. F. C. SHRUBSALL gave an account of the records of after-histories of cases in the London school service. Two hundred and twelve cases under 15 years of age had been notified during 1924, and reports on 111 of these were to hand. Complete recovery was recorded in 26 only; in 44 there was change of conduct, in 40 sleeplessness, in 26 impairment of intelligence, muscular twitchings and tremors in 12, and ocular disturbances in 10. There was evidence of a rapid recovery of intelligence once the improvement had started, but the usual intelligence tests were difficult of application on account of the lack of concentration and the impossibility of ensuring the coöperation necessary. The rate of mental growth was found to be seriously retarded, especially if the child were less than five years of age at the time of the attack. In older cases the growth of knowledge seemed to go on *pari passu* with a progressive loss, until finally the dementia won. Quite often a moral deterioration was unaccompanied by any diminution of intelligence, and masters would be very willing to take back employees who had been convicted of criminal offences, as they were satisfactory and faithful workers. The excitement symptoms might pass off under favourable conditions, but keeping the child in the limelight, or "baiting" by other members of the family might lead to secondary exacerbations. It had been noted that the disorder of conduct was usually one that might have been expected from a consideration of the heredity and environment, stealing, for instance, being met with in other members of the family, as if the disease merely unmasked or precipitated an innate tendency. The crimes committed were almost invariably done in the face of certain detection. It had been found that the irritability was reduced by carefully ordered industrial school life, but that the inclusion of such children in a community was disastrous for the other members, and any such institutions must be *ad hoc*. Regarded from the legal aspect there was no possibility of a successful plea of irresponsibility; they knew quite well the nature of the acts they committed; the only possible defence would be that of "irresistible impulse."

Dr. A. S. MACNALTY, speaking from the epidemiological point of view, referred to the great increase in the number of cases, from 541 notified in 1919 to 1025 in 1923 and 4605 in 1924. He concurred in the difficulty of distinguishing between true after-effects and the persistence of the original infection. His colleague, Dr. Allan Parsons, had investigated some 250 cases of which 136 showed mental symptoms. There was mental impairment in 57; psychic disturbances in 47, drowsiness in 15, neurasthenia in 7, loss of memory in 6, and melancholia in 4. One hundred and twenty-one showed ocular palsies or pareses of face or limbs, and there was much weakness and exhaustion. In Dr. MacNalty's opinion the gravest symptom was the Parkinsonian syndrome. He agreed with Dr. Shrubsall as to the kind of treatment desirable. The matter was under the consideration of the Ministry of Health.

The Nosology of Encephalitis Lethargica.

Dr. P. C. P. CLOAKE said that the symptomatology of this condition was so varied, striking, and bizarre that insufficient attention had been paid to a rational classification and explanation of the phenomena observed. He pointed out that many toxæmias might give rise to a state of delirium, although a constitutional nervous instability undoubtedly predisposed to its development. In encephalitis lethargica we had this process, and in addition a special selective action on the central nervous system. The state of toxic delirium accounted for the symptoms of impairment of apprehension, of the power of retaining mental impressions, memory defects, variability in mental capacity, and level of attention, going on to clouding of consciousness, with hallucinations and delusions and disorientation. As in all toxæmic conditions, these symptoms were worse at night. Due to quite another cause was the lethargy, resulting from a localisation of disease process in the mid-brain, and comparable to the symptoms produced by neoplasms of this region. Dr. Farquhar Buzzard had suggested that the mechanism of impairment was a blocking of the Sylvian aqueduct by swelling or scarring, with a resulting internal hydrocephalus. Dr. Cloake was of the opinion that the more we understood normal sleep the more we should understand this aspect of encephalitis lethargica. Either of these processes might be dominant. If the toxæmic syndrome were the more strongly marked there would be the excitement at night, while in the day the specific drowsiness would manifest itself in a milder form, it being easy to awaken the patient, who appeared then as if waked from normal sleep. If there were a diurnal delirium it was usually occupational and the patient could be

roused from it in a similar way. Coma, if it occurred, was probably toxic. This explanation of the symptoms also accounted for the sequelæ. The nocturnal restlessness was due to a mild subacute toxic state stimulating the cortex, and subsiding about 5 A.M. as such toxic states usually did. Mischievousness was really only hyperactivity, due to the removal of inhibitions, as in all mild intoxications. It must not be forgotten that the persistence of such behaviour might be partly habit, as shown by the improvement resulting from changed environment. Prolonged hot baths at bed-time were helpful in these conditions, lessening the toxæmia and drawing the blood to the peripheral vessels.

Delusions and confusion disappeared with the acute stage, but the brain did not at once recover from the damage, and what was left was a symptom-complex comparable to that of head injuries from any other cause. In the conditions resulting from head trauma there had been described the same difficulties in behaviour, the changes of character, impairment of concentration and memory, narrowing of mental grasp, loss of motor associations and failure of reasoning power, impairment of memory for recent and remote events, slowing of the stream of thought, and loss of inhibitions resulting in a life dominated by instincts, hitherto kept under control, which formed the characteristic sequelæ of an attack of encephalitis lethargica. In other cases the organic changes were not the most marked feature and the resulting picture was more characteristic of the specific lethargy, the lack of spontaneous activity, which might be present with or without impairment of intellect, the loss of psychic tone, which was pathognomonic, the apathy and inertia with good judgment and intellect, which might be compared to a permanent condition of half-sleep and which might exist without a Parkinsonian syndrome. There might also be adiposity and diminished sex activity possibly due to inadequate functioning or impaired absorption of the anterior pituitary. Lesions in the pituitary body had been recorded in encephalitis lethargica. True psychoses were accidents, and the mania, melancholia, and dementia præcox met with occasionally were not of the well-recognised types. The patient was often egocentric and hypochondriacal, but there was no real retardation of thought, and insight was always present. Delusions, if present, were weakly held, though persistent, and showed no systematisation or accretion, and the so-called "precocious dements" had mental clarity and were accessible. They frequently showed basal ganglia lesions and were to be regarded as manifestations of organic cerebral disease.

Further discussion was adjourned until Tuesday next, Jan. 27th.

HUNTERIAN SOCIETY.

THE PERFORATION OF GASTRIC AND DUODENAL ULCERS AND AFTER.

AT a meeting of the Hunterian Society held at the Mansion House, London, on Jan. 19th, Mr. H. W. CARSON occupying the chair, Mr. G. GREY TURNER delivered one of the Hunterian lectures of the session, taking for his subject the Perforation of Gastric and Duodenal Ulcers and After.

Mr. Turner began by exhibiting a table showing the results in all his cases during the past 24 years. The total number was 194, with 146 recoveries and 48 deaths. This was the gross number of perforations he had handled, and it included localised perforations, incomplete operations, and cases in which it was finally decided not to operate. The actual number of cases in which complete operations had been done during the same period was 147, with 124 recoveries and 23 deaths, the percentage of deaths thus being 15·64. Taking the 98 cases which were operated on within 12 hours of perforation, however, only eight deaths resulted, or 8·16 per cent. Of these, the perforated gastric ulcers operated upon within 12 hours numbered 27, with three deaths, and the perforated duodenal ulcers 71, with five deaths.

He had selected this subject upon which to talk to a gathering largely of general practitioners because it was upon the general practitioner that the early diagnosis so essential to recovery depended. When a case was taken in hand reasonably early and was carried to a successful issue, the credit lay with the practitioner who had taken the responsibility and advised the operation, rather than with the surgeon who had actually carried it out. The all-important point was to get the case at a sufficiently early period. No new refinement in the technique of operation made anything like the difference that was made if only a short period had elapsed between the perforation and the surgical interference.

Importance of History.—The "Kissing" Ulcer.

He went on to speak of the extreme importance in these cases of relying upon the history. The onset was nearly always sudden, and it was of extreme value to take careful account of the evidence given by relatives and friends. On analysing his cases he was surprised to find how often these calamities occurred in people over 50 years of age. Among 50 gastric cases, six were in persons over 50 years of age, and among 143 duodenal cases, 40 were over 50. The fact that the symptoms occurred in a comparatively elderly person, therefore, need not deter a medical man from making the diagnosis. He also emphasised the frequency of the acuteness of the ulcer which perforated. He had, he said, long recognised how often the perforation which occurred was that of a second contact or "kissing" ulcer on the opposite wall of the stomach to that of a chronic ulcer. He felt convinced that this was an acute ulcer whose principal characteristic it was to perforate. It was not usually the chronic ulcer that perforated, it was the "kissing" ulcer.

Confronted with this calamity of perforation, the first duty of the surgeon was to save the patient's life. His figures with regard to immediate gastro-enterostomy suggested that this resort was apt to add to the mortality rather than to diminish it. Of 26 cases in which primary gastro-enterostomy had been done, 20 had recovered and 6 had died, a death-rate of 23·08 per cent., and of 98 cases without primary gastro-enterostomy, 81 had recovered and 17 had died, a death-rate of 17·34 per cent. His belief was that the best thing to do was to get the patient over the calamity of perforation, and then, if one was quite sure that a gastro-enterostomy was necessary for the cure of his trouble, to do this as a delayed operation before the patient left the hospital. He had done such delayed operation in 11 cases; no deaths had resulted. The average interval between perforation and gastro-enterostomy in these cases was just over 18 days.

Temporary Gastrostomy.

In very bad cases of general perforation he had tried temporary gastrostomy, and although the table of results might not appear to be very striking, he could speak about this procedure most enthusiastically. In many cases it had been of the greatest possible help. It must, of course, be understood that the cases in which it was done were very bad cases. Out of 147 operations for general perforations he had employed this measure 26 times, and in these 26 cases there were eight deaths, a mortality of over 30 per cent., but the average number of hours of perforation in these cases was 17. Another point of great interest was the question of irrigation of the peritoneum. He had started by being a most enthusiastic "washer," but later he altered his views. The death-rate as between cases irrigated and cases not irrigated in his own experience was not very different—about 16 per cent. in both instances. The percentage incidence of complications was 17 (irrigated) and 12 (non-irrigated). The death-rate also had to be read in conjunction

with the average period of perforation, which had been twice as long in the cases not irrigated as in the irrigated cases.

The Operation Problem.

The first problem that arose in connexion with the actual operation was the question as to where it should be carried out. In the great majority of cases it was better that the patient should be transported to a properly-equipped hospital, and except in a comparatively small number of cases this could quite safely be done. He thought that the surgeon should be content with the middle line of incision, and he must not be afraid to take hold of the stomach quite boldly. Very often the stomach was distended. Under these circumstances great help would be gained by passing a stomach-tube on the operating table; the stomach went down like a big balloon, and all that was then necessary was to stitch the ulcer. A thing which had astonished him was the way in which the dirty-looking material in the peritoneum was apparently absorbed without the slightest difficulty.

Complications.

With regard to complications, in his 147 cases of ruptured gastric and duodenal ulcer 23 developed major complications, and of these nine died. The complications were subdiaphragmatic abscess (five recoveries, three deaths), pneumonia and pleurisy (five recoveries, two deaths), pelvic abscess (one recovery, two deaths), gastric fistula (two recoveries, one death), pulmonary embolism (one death), and prolapse of intestine (one recovery). He also gave particulars of one remarkable case in which there had been repeated perforations. The first operation was done when the patient was aged 13, the ulcer being on the anterior wall near the pylorus. The second operation was at the age of 16, with the ulcer on the posterior wall, near greater curve. The third operation was at the age of 17, when there was a much indurated ulcer on the anterior wall, just in front of the hilus of the spleen. The fourth operation took place 21 days later. There was peritonitis due to rupture of an abscess just below the spleen. At the same time an anterior gastro-enterostomy was done. A fifth operation took place 29 days later for acute small intestinal obstruction. The patient made a good recovery, served all through the European war without trouble, and since demobilisation had had several obstructive attacks which were always relieved by medicine. Now, 15 years after the first operation and 10 years after the last, he looked and felt well, and could eat any food without trouble.

The lecturer gave a particularised account of the after-history of his cases. Out of 194 cases, 146 recovered, and of these 17 could not at present be traced; nine had been operated upon within the year, leaving only 120 cases for review. Of this number 81 were quite well, 19 had slight digestive trouble, 18 had had a further operation, two had recurrent trouble and required further operation, 17 had died (eight from some sequel of original trouble, and nine from other causes, without recurrence), and three were known to be well shortly after operation and were then lost sight of. As to the bearing of the type of ulcer on the question of recurrence, in a series of 31 acute ulcers the symptoms recurred in three cases, whereas in 44 cases of chronic ulcer 13 recurred.

Discussion.

The PRESIDENT said that Mr. Turner was to be congratulated upon getting his cases so early. When Mr. Turner stated that 75 per cent. of his cases were operated on within 24 hours of perforation, and more than 50 per cent. within 12 hours, he was amazed at the proportion. His own proportion was something like 15 per cent. in the first 12 hours.

Mr. JAMES BERRY said that Mr. Turner did seem to have a wonderful opportunity of getting these abdominal cases. This was largely due to the fact that he and his colleagues at Newcastle had trained the practitioners in the neighbourhood to recognise gastric and duodenal perforations and send them without loss of time to the infirmary. With regard to drainage, his own feeling was that in the great majority of cases there was no need to drain at all; in a certain number of cases it was wise to put a single drain in the hypogastric region. It was equally essential that if that drain was put in it should be taken out very soon—the next day. He thought all surgeons would be agreed that irrigation was rarely to be done, though he remembered the days when surgeons used to wash out the abdomen thoroughly. As to whether gastro-enterostomy should be done after the original ulcer had been sewn up, his own practice had been not to do gastro-enterostomy, for it seemed to add a great deal to the risk of operation.

Mr. JAMES SHERREN commented on the change that had taken place in the type of perforated ulcer now commonly met with. Twenty years ago one found much more often than now an acute ulcer which had perforated, without any previous history. The majority of cases which perforated now seemed to be chronic and had given symptoms for many years. If an ulcer, whether of the stomach or duodenum, was chronic, he thought that, in addition to closing the perforation, the surgeon must at some time do a curative operation. The choice of the time would depend on the experience of the surgeon and the condition of the patient, and no rules could be laid down. The step taken would generally be a gastro-jejunostomy. His experience of cases which had refused gastro-jejunostomy had not been favourable; a good many of them had come into hospital with second perforations, and had died. No one, of course, would dream of doing a gastro-jejunostomy for the treatment of acute ulcer of the duodenum.

Mr. R. P. ROWLANDS said that cases which came to Guy's came as a rule very late; the main thing was to save the life of the patient, and he personally did not believe in doing a gastro-enterostomy as a routine. All these cases must be dealt with on their merits. If the operation of gastro-enterostomy became a routine, then there would be a high mortality, which would be quite unjustifiable. In a few cases in which it was not possible to close the perforation a gastro-enterostomy might be the only life-saving measure. Seeing that about one-quarter to one-third of the cases only required gastro-enterostomy, it seemed a pity to do gastro-enterostomy at the first operation; it was far better to watch and wait and do the gastro-enterostomy when the need of it was demonstrated.

Mr. GORDON TAYLOR thought that the mortality attending the catastrophe of perforation of gastric or duodenal ulcer had been greatly lowered, not by any particular modification of surgical technique, but by the comparatively early date at which, even in London, the cases were now received. Since the war cases of perforation had come under the surgeon's notice very much earlier than they used to do. With regard to the actual technique of the operation, in acute ulcers he confined his attention to sewing up the ulcer, but in the case of chronic ulcers, particularly juxtapyloric and duodenal ulcers, he did a simultaneous gastro-enterostomy. Mr. Turner had not mentioned one class of case, that of a simultaneous hæmorrhage and perforation, of which the speaker had seen two examples comparatively recently.

Mr. A. J. WALTON said that in his own experience, relating to 71 cases, nearly always these ulcers had been chronic ulcers. It was often said that the history was of little value, but in 36 gastric ulcer cases he discovered in all except two that there was a long past history, and the same was true of the duodenal ulcer cases. Then again, to confirm his belief in the chronicity of the ulcer, he found at operation the edge of the ulcer extremely indurated; in an acute ulcer, apart from perforation, there was never any induration. He had already published a series of 42 cases which were investigated in the post-mortem room of his hospital, and in all but one

it was reported that the ulcer on microscopic examination was manifestly chronic, and in the case of the exception it was not stated whether it was chronic or acute. It was his practice to perform gastro-enterostomy in most cases at the time. It added only about another ten minutes to the operation, and, as a general rule, he did not think it added to the danger.

Mr. T. P. LEGG said that he was usually content to suture the ulcer, and he did not perform a gastro-enterostomy; at any rate, he left the question of a gastro-enterostomy until a later date to see whether the patient needed it.

Mr. H. TANNER said that the wide distance one had to go with the sutures beyond the perforation was in favour of Mr. Walton's contention as to chronicity.

Reply.

Mr. TURNER said that it was quite likely that experienced surgeons might decide that in certain cases gastro-enterostomy was actually indicated and should be carried out at the primary operation; but he was sure that there would be fewer calamities if it was generally agreed that gastro-enterostomy, apart from exceptional cases, should be left to the second operation.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 1360.)

THE Commission resumed its sittings after the Christmas vacation on Jan. 13th, the Chairman of the Commission, Mr. H. P. Macmillan, K.C., presiding.

ALLEGED ILL-TREATMENT OR UNJUSTIFIABLE DETENTION.

The Chairman announced at the outset that the Commission had decided to undertake the judicial investigation of some cases of alleged wrongful detention and ill-treatment which had been selected by the National Society for Lunacy Reform, these involving serious allegations against particular individuals. It had been decided, he said, that both the persons making the allegations and those who met such should give their evidence on oath. The Commission, he added, were willing to receive and consider statements in writing by any person who might wish to bring information which might assist deliberations.

Dr. G. F. Barham (med. supt. of the L.C.C. Mental Hospital, Claybury) was examined. He said at the moment 2282 beds were occupied in that institution. The nurses were in the proportion of 1 to every 4·8 patients. During the last two years he did not think there had been cause to suspend any attendant pending investigation of a charge of wrong conduct. Three years ago he inquired into such an allegation, but the evidence did not support the charge. Only once in the past seven years had a nurse, a male, to be dismissed on account of ill-treatment of a patient. He said he favoured to some extent the employment of women nurses on the male side; under their influence the ward obviously became pleasanter and brighter, and by nature women made better nurses than men. In reply to questions, Dr. Barham said he favoured a scheme of coöperation between mental institutions and general hospitals by which periodic interchanges of staff might be effected.

He said he did not necessarily see all fresh patients as soon as they arrived, though one of the doctors did. He personally saw every new case within a few days of arrival; these were received into special admission wards, highly staffed. There was every facility for keeping patients until they had been completely examined and reported upon. In addition to the usual history of patients supplied, the friends were written to, and information was received from a lady hospital visitor, who offered to visit the home from which the patient came. She was entirely a voluntary worker, and preferred to remain in that capacity. She was of very great assistance to him. She did not wear uniform. There was room for more such help. Her help was also most valuable when the time arrived for a patient to be discharged, for she found out to what sort of surroundings the patient was to go, and whether aid was needed for a fresh start in life. Asked as to the effect on a sensitive, educated patient of association with noisy patients, Dr. Barham said he had quiet reception rooms, and he would not subject a patient to such association. Shrieking, however, was much less frequent in a mental hospital than was commonly supposed. He added that a dentist attended twice weekly, and the institution could always procure the services of any specialist who might be needed. In reply to a question by the Chairman, Dr. Barham detailed the treatment carried on at the hospital, both mental and physical, remarking that the former included psychic analysis, and sometimes psycho-analysis. By constantly watching the patient and trying to rehabilitate the mind, one derived a good clue as to what was wrong. Small details, such as the manner of serving dinner and the arrangement of the ward, were regarded as important, for everything which tended to make life happier was a help. As soon as one of the doctors thought a patient was becoming convalescent, his (the speaker's) attention was drawn to him or her, and he gave such patient his personal oversight. In such a large institution he could not claim to know intimately many patients, but he could rely on his colleagues.

The Chairman asked him whether he favoured the separation of the administrative from the medical functions of the head of such an institution. Dr. Barham replied that it would be a very helpful thing if it could be managed, but he was fairly strongly convinced that it was impossible. Much of his routine administrative work he was able to delegate, and he had a large clerical staff. The idea of a responsible person being able to relieve the head of much administrative work and so enable him to concentrate on the medical work was capable of development. Division of responsibility, however, was a difficult matter. In answer to further questions, he said that some patients on going out might not have homes to go to, and in the solution of this problem the After-Care Association was of great value. Many times it was found that a patient, apparently recovered, on going again into the world unsheltered suffered a relapse. In the year 1924 184 patients were discharged from the hospital, 126 of them discharged recovered, 32 relieved and sent to the care of friends, 13 on trial, and one on trial had died. Twelve patients sent out on trial relapsed. Many patients received allowances on leaving the institution. A great deal of correspondence and trouble was caused by relatives and friends requesting discharge before patients were fit for it. A very considerable number of incipient cases if given early rest and appropriate treatment would, he was convinced, escape certification. If anything was developed along the lines of early clinics for these cases he hoped there would be a great number of places available; there should be liberty for patients to go where they wished for such treatment; and, of course, the Maudsley Hospital should be open to them. Asked about the effect of the "stigma" attaching to a mental hospital, the witness said that under the clinic system the mental department of a general hospital might come to be known as the "mad ward."

Asked by Mr. Micklem whether he thought it wise to have such large establishments as that at Claybury, Dr. Barham said he hoped that future institutions would not be built so large, though the Claybury Hospital was not out of hand. One catering for about a thousand patients was his idea. Discharges might occur of patients who had been inmates as

long as 20 years. Artificial feeding was sometimes necessary, and, as a rule, it was done without trouble. Dr. Barham was questioned about the bathing and meal-times of patients, as well as visitations, and in his answers he said that the tendency was towards the open door and window, and contrary to the idea that patients were irrevocably locked in. If a discharged person had a chance of employment and wished a certificate stating he was recovered, that was always readily supplied. In reply to Mr. Snell, M.P., he said that the employment of women nurses on the male side at Claybury was discontinued because it was a war-time measure, and when the men returned their posts were restored to them; also, structurally, Claybury was not designed for this. The Committee, however, had under consideration the construction of two villas, and he had recommended that these should be staffed by female nurses.

Replying to Sir Humphry Rolleston, Dr. Barham said it was necessary to fix the age of entry for female nurses at 18 so as to secure them before they were ear-marked for some other occupation. Somewhat above 25 per cent. remained to go through with their training. He was questioned by Sir David Drummond as to the lack of definite improvement in the recovery-rate of mental cases, and replied that he did not think the recovery-rate was an absolute criterion; patients were now treated in a more intelligent and a more human way than formerly, and much depended on the definition of "recovered." He added that he would like to see his own hospital linked up with a general hospital and attached to a school of medicine, and to have the coöperation of an outside staff. The further one proceeded with the investigation of these cases the more one felt the need for help. In answer to Sir Ernest Hiley, the witness said that not more than four or five of the patients in the institution had psycho-analysis.

MENTAL AFTER-CARE ASSOCIATION.

Miss Vickers, secretary of the Mental After-Care Association, said this body was formed in 1879, and was a charitable institution. Most of its funds were raised voluntarily, but recently boards of guardians subscribed, though there were no official funds. Last year the Association had touch with cases from 117 mental institutions, and was instrumental in sending cases for rest and change before resuming work to cottage homes, run by retired mental nurses who understood the work. Inquiry was made into the home conditions of patients. The help of the Association was invoked by mental superintendents, who informed the secretary of the imminence of a discharge, and then the machinery was set to work. Where necessary, grants to facilitate a re-start in business were made. Last year 1176 patients were relieved by the Association, which was now forming provincial branches. Miss Vickers said she had personally interviewed over 7000 patients, and always alone. Asked as to complaints, Miss Vickers said these were very few and trivial, and if only people who criticised would go and see they would realise how futile they were. Probably not more than 4 per cent. of patients made complaints, and only a very small proportion of that 4 per cent. complained of any ill-treatment. In the last 14 months only two people had refused the offer of a visit to their homes.

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION.

The sittings were continued on the day following, under the presidency of the Chairman, when evidence tendered by the British Medical Association was received, Dr. R. Langdon-Down being its chief spokesman. He was supported by Dr. J. W. Bone, Dr. F. H. Edwards, Dr. C. O. Hawthorne, Dr. E. W. G. Masterman, Dr. Christine Murrell, Sir Jenner Verrall, and Dr. G. C. Lord, the last-named in the capacity of assistant medical secretary.

The Chairman said the Commission proposed to include the Association's valuable memorandum on the subject in its proceedings. There were varieties and degrees of mental ailment which did not necessarily need restraint. The document considered that the compulsory order should be the last resort, not the first. The definition of mental deficiency set out in the Mental Deficiency Act, 1913, seemed to include some states of what could be called mental disorder.

Dr. Langdon-Down said that unfortunately that Act endeavoured to set up a medical classification of those patients. Sir Humphry Rolleston thought the term "mental abnormality" should be replaced by "mental disability," as an abnormality might not be a pathological departure.

The next point discussed was the Association's view that in every case of certification two medical certificates should be required, the Chairman commenting on the extra total expense thereby entailed.

Dr. Langdon-Down did not think this, on a possible 15,000 certificates, would be an impossible amount. In some cases two certificates were very necessary, and how were exceptions to be made? To have only one put an undue responsibility on the certifying doctor. He added, in reply to further questions, that the Association considered that the usual medical attendant should be one of the certifying doctors. Any special standard, such as that of a holder of the Diploma in Psychological Medicine, would greatly limit the number of medical men available as signatories.

The Chairman pointed out the significance of the diagnosis on which the certificate was based, remarking that the specialist's diagnosis was regarded as the most valuable. He asked whether the curriculum of the medical student included a sufficient training in this branch of medicine, and Dr. Langdon-Down's reply was that he thought in most cases the student's course of training in this subject was sufficient. He asked that information on the point might be furnished to the Commission from university calendars. Asked by Sir Humphry Rolleston whether there was not at the present time great difficulty in getting general practitioners to certify at all, the witness said that was not because they distrusted their own capacity, but they were conscious of the risks to themselves in so doing. The profession considered that the protection to its members was inadequate, but it did not wish to under-rate its responsibility in the matter. The certifying practitioner, the Association thought, should enjoy the immunities of a witness in a court of law. The question at issue was, largely, one of the honesty of the practitioner.

The Chairman said that unless the professional man concerned could be trusted the system would break down. But to allow to the medical man the same immunities as a witness enjoyed would mean a considerable alteration in the law.

Dr. Langdon-Down replied that if the present law on the subject were allowed to stand it would certainly deter the medical man. After the first verdict in the Harnett case the Association received large numbers of letters asking for guidance in such matters.

The Chairman agreed that it seemed wrong that the doctor, for doing his duty in this respect, should be, as it were, placed in the dock to justify himself, instead of the onus of proof lying on the attacker; but it was a greater thing to ask for absolution from all possibility of an action.

Dr. Langdon-Down said the Association approved, in the main, the general principles of the Mental Treatment Bill.

On the question of the sending of a case requiring immediate attention to the workhouse—thereby rendering him a pauper—Dr. Langdon-Down said that if the accommodation and arrangement of workhouses were better there would not be so much objection to those institutions.

The Chairman said he thought some intermediate institution was the ideal, and the wards of the ordinary hospital might be used, though a separate section would have to be provided, and to this Dr. Langdon-Down agreed.

Dr. Masterman gave an account of the provision of infirmaries in London, remarking that if only the stigma could be removed, the accommodation for lunatics in the larger infirmaries of London was just what was wanted.

It was agreed that the evidence from these representatives of the B.M.A. should be continued at a later date to be arranged.

THE MEMORANDUM OF THE BRITISH MEDICAL ASSOCIATION.

The principal objects favoured in the Memorandum submitted to the Commission on behalf of the British Medical Association may be briefly set down as follows:

1. *To Meet Public Susceptibilities.*—In order to minimise the objections which prevent patients from accepting proper treatment at the earliest possible moment, it is proposed to avoid undeserved stigma by allowing less formal arrangements for suitable cases. It must always be borne in mind, however, the Memorandum adds, that the associations springing from any arrangements "will depend in the long run upon the actual facts and usage and not upon any verbal discretion or sympathetic intention."

2. *To Avoid the Need of Formal Certification.*—For mental patients whose symptoms, though acute, are likely to be short-lived, there is a hope that their recovery may render a formal reception order unnecessary. The Mental Treatment Bill of 1923 made a proposal for the temporary treatment of mental disorder without a reception order, the period to be limited to six months, with power to extend to a further six months. The Memorandum proposes to extend the voluntary boarder principle to cover all consenting cases and to make it applicable both to the 12 months of treatment and during convalescence if so desired.

3. *To Provide Opportunities for Voluntary Treatment.*—The provision enabling registered hospitals and licensed houses to receive suitable patients as voluntary boarders should be extended to county and county borough asylums. The system implies the consent of the patient and provides for care and treatment as long as necessary, thus avoiding or postponing the necessity for a reception order.

4. *To Arrange for Accommodation to Suit all Needs.*—Some sections of the population prefer public management, some private. There is a desire in the community generally that many patients should be treated otherwise than in public institutions. The existing veto on the setting up of new licensed houses should therefore be repealed or facilities provided for the treatment of patients in small numbers in private hands.

5. *To Secure Uniformity of Certification.*—Two medical certificates should be required by law in all cases, for submission to the judicial authority asked to issue a reception order.

6. *To Obtain Immunity for Medical Signatories.*—The Memorandum insists upon the medical certificate being definitely given the status of evidence, so that the protection which witnesses in courts of law are entitled to receive shall be extended to the practitioner who signs a certificate under the Lunacy Acts. Section 28, subsection 4, of the Act of 1890 runs: "Every medical certificate . . . shall be evidence . . . as if the matters therein appearing had been verified on oath."

7. *To Amend the Reception Order.*—The present urgency order might give way to a provisional order. It is clearly desirable that judicial authority should be obtained at the earliest possible moment for any measure which means the loss of personal liberty, and it should be sufficient for safety and convenience to limit the duration of an urgency order to three days. Such an order should be capable of extension for a further 28 days, at the expiration of which the patient must be discharged unless he is placed under a reception order or becomes a voluntary boarder. Experience suggests that many pauper patients who come under the 17 days period of observation get well and go home within this period.

8. *To Revise the Conditions of Voluntary Boarding.*—Permission in advance from the Board of Control or two members of the Visiting Committee appears unnecessary. Notice to leave should, in the interest of the patient, be extended to 72 hours.

9. *To Make Provision for After-care.*—The principle of permitting after-care and convalescent homes at the seaside or elsewhere in connexion with county and county borough mental hospitals should be recognised.

10. *To Ensure Unity of Central Administration.*—There should be a single administrative authority except in relation to property. Form 16 of the Lunacy Act, 1890, speaks of a person, entitled to payment from a public department, "by reason of mental disability unable to manage his affairs." This expression might be found useful to indicate the need for measures of control of the patient's property and affairs, not necessarily of his person, in place of the expression "of unsound mind."

The sittings of the Commission were continued on Jan. 17th.

ALLEGED WRONGFUL DETENTION.

The first of the cases of a specific charge of wrongful or improper detention was gone into, that of Mr. Hugh Wilson Holman, a consulting engineer and naval architect, aged 58. There were also present counsel for the doctors concerned and for Ticehurst Mental Home (Mr. Dickens, K.C., Mr. Croome Johnson, and Mr. Somerville, the last-named for the Medical Protection Society).

The Chairman said that when it was decided to take this case, it was thought right and fair to notify the persons concerned in the charges and criticisms, so that they might, if they so desired, attend and take part in the proceedings. The Commission decided to hear Mr. Holman's own personal experience only, and they would not announce their decision on any particular case inquired into in this way; the evidence so adduced would form part of the material upon which the Commissioners would ultimately base their report and such recommendations as they might make.

Mr. Dickens, K.C., on behalf of Dr. Percy Smith and Dr. Porter Phillips (who were present), asked that the specific charges against his clients might be formulated in writing, and stated that it would be necessary for him to go into the whole of the facts and call rebutting evidence from a number of witnesses. There was also the important matter of the expense of the proceedings.

Mr. Somerville pointed out that when the case of Mr. Holman was tried at the High Court, Mr. Justice Sankey, in his judgment, said he found not only that the authorities at Ticehurst were not negligent in acting as they did, but that they would have been negligent if they had released the defendant; under the circumstances. He, the speaker, therefore submitted that it was not fair to bring the doctors again to hear the same charge, nor profitable to hear evidence on which a judgment had already been pronounced in another place.

Mr. Stewart, who explained that he was briefed by Mr. Holman, intimated that there were many cases of the kind which could be brought before the Commission, and he called for the production of any documents which were or might be required to elicit the truth.

The Chairman said the Commission's difficulty was increased by the fact that the case had already been minutely examined in a court of law and judgment pronounced upon it. There was some embarrassment in dealing with concrete cases at all, because such hearing involved the mention of the names of particular persons. Yet it was felt it would not be proper to deprive critics of the existing system of the opportunity of putting forward some cases which they wished to have investigated; and the public would have the chance also of hearing any evidence which might be brought by way of answer.

Mr. Holman was then sworn, and examined by Mr. Stewart, who took him through his written statement, of which the following is a brief summary. In October, 1914, he suffered severe internal injuries as a result of an accident, and on recovery he took a post as hon. secretary to a Red Cross Hospital, and remained in the position two years. He then contracted pneumonia, and was taken to the house of a doctor in Croydon, where he became so ill that day that night nurses were necessary. In December, while there, he was certified and sent to Moorcroft though, he averred, his mental condition was quite sound. He transacted a good deal of business, saw a number of people, wrote letters, and kept a diary. A doctor came to see him, took a specimen of his blood, and, it appeared, reported a positive Wassermann reaction, but subsequent trials (five) were negative. At a later stage he declared he had never had any venereal disease whatever. A result of the report of a positive Wassermann was that he was declared to be a sufferer from G.P.I. He detailed visits of Sir Maurice Craig, Dr. Percy Smith, and Dr. Stoddart. He was driven quite unsuspectingly to Moorcroft, and on arrival there first learned that he was a patient in an asylum from the appearance of an old man, who came and sat down in an aggressive sort of way, and on being asked what he wanted said he was there to look after him, Mr. Holman. He then asked, "I am in an asylum, then, am I?" and the reply was, "Yes, you are in an asylum all right, and it will be very difficult to get out." He took that as a sort of challenge. On his first admission to the institution he was treated with considerable courtesy. He was seen by a special visiting justice appointed by the Uxbridge Bench, a grocer, who obviously knew nothing about lunacy. If he had had the opportunity of challenging the allegations on which he was incarcerated, he would have welcomed it. He said he was allowed to go into Uxbridge occasionally with an attendant, who often left him by himself. The witness alleged medical neglect when he had pneumonia and a relapse of his jaundice; he was, he said, left entirely to the head attendant, who was medically untrained. A surgeon was sent for to operate, but he did not do so, as he, the patient, was said to be suffering from general paralysis of the insane. After being in bed about a month he gradually regained strength. On the night of Feb. 8th, 1917, he escaped from the institution, and he sought out a doctor, who certified that he was fit for light duty, he having told the doctor that he was invalided out of the Navy and wished for an examination. He was retaken in Chancery-lane three days after his escape. This certificate was taken from him, and he was placed in one of the refractory wards. He took every possible legal step to secure his release, but without result. In January, 1917, he was transferred to Ticehurst, where he had only a cursory examination; all his protests against being detained were ignored. He determined to take the first opportunity of escaping from Ticehurst, and did so on August 28th, 1917, and hid for a fortnight, communicating afterwards with his solicitors to protect his interests and take means for obtaining redress. On representation to the Master in Lunacy, who was alleged to have expressed his dissatisfaction at the treatment, the witness's estate was released in his favour.

At the conclusion of Mr. Stewart's examination of the witness, Mr. Dickens, K.C., in cross-examination, asked whether he did not think he was at one time a menace to himself or others. The witness replied that he had not been a menace at any time, and he certainly had never been insane. He considered that the origin of troubles such as his was, that doctors were interested in private asylums, living as they did on fees derived for getting people in and out of those institutions. He considered that medical men should look upon themselves as members of a priesthood, holding aloof from the world's corrupt practices.

The Commission adjourned until Jan. 26th.

Reviews and Notices of Books.

RHEUMATIC HEART DISEASE.

By CAREY F. COOMBS, M.D., F.R.C.P. Lond. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1924. Pp. 376. 12*s.* 6*d.*

THIS valuable monograph appears at a time when investigators in all countries are looking for a lead which will help to solve the problem of rheumatic heart disease. Dr. Carey Coombs during the past 20 years has given much time and thought to the study of this disease. Many articles have appeared under his name dealing with this subject, and these have been accepted by the profession as notable contributions to medical science. He writes from a wide experience which includes clinical observations made on a large group of patients, children and adults, extending over many years. In this book bacteriological investigations together with histological and pathological studies have been carefully recorded, and the chapters on diagnosis, prognosis, and treatment are dealt with from the practical viewpoint of after-history returns. Dr. Coombs is in complete agreement with Dr. F. J. Poynton, who contributes an introduction to the book, that the exciting cause of rheumatic fever is the streptodiplococcus first described by Dr. Poynton and Dr. A. Paine. To those familiar with recent transmission experiments in America, which offer strong evidence against the strepto-diplococcus hypothesis as the specific agent of the disease, the argument of the author in support of his view will appear unconvincing. In the chapter on physical signs, those structural changes in the valves and heart muscle which are recognised clinically by the usual methods of palpation, percussion and auscultation are described in detail. The author is not always on safe ground in his interpretation of these abnormal signs. There are certain adventitious sounds which are not so easy to explain as we are led to believe, nor for practical purposes is it essential to conclude from these signs that certain pathological changes exist. He takes the view that because a systolic murmur is sometimes absent in mitral stenosis, mitral regurgitation is not present in these cases. One could as easily argue that a systolic murmur is not a sign of mitral regurgitation. There are those who hold that mitral stenosis is always associated with mitral regurgitation, and as a systolic murmur is so often absent in this type of valve disease, it is fair to assume that the quality of such a murmur is an unreliable guide in the diagnosis of organic valve mischief.

Interesting facts emerge from the study of 600 to 700 after-history records of patients kept under more or less close observation over varying periods of years. The percentage of cases which could not be traced is small considering the difficulties associated with this type of research. The evidence furnished by this investigation has increased our knowledge of prognosis in rheumatic heart affections, and has enabled the author to write a valuable chapter on the treatment of this crippling disease.

BIOCHEMISTRY AND HUMAN PHYSIOLOGY.

Fundamentals of Biochemistry in Relation to Human Physiology. Second edition. By T. R. PARSONS, B.Sc. Lond., M.A. Camb., Demonstrator in Physiology in the University of Cambridge. Cambridge: W. Heffer and Sons. 1924. Pp. 295. 10*s.* 6*d.*

Mr. Parsons in his little volume gives the student a summary of elementary biochemical facts. In this edition he has included Werner's views upon the

formula for urea, and insulin is dealt with more fully than in the previous edition. Everywhere the descriptions are accurate, clear, and up to date, and we feel sure that they will be appreciated by the student. The difficulty of adopting a style agreeable to all is well known. Whilst a precise, cold analysis of facts, followed by a judicial summing up appeals to some, others may be more pleased with a lighter mode of expression. This little book is written in what might be called the "chatty" style. Quotations from some classical source head the chapters, and the Greek characters which adorn many of the pages may be out of place in a book for students. In essentials, however, the book is admirable.

THE PNEUMOCOCCUS AND PNEUMOCOCCAL INFECTIONS.

By L. COTONI, C. TRUCHE, and Mlle. A. RAPHAEL. English edition by D. S. PAGE, M.A., M.B., D.P.H., Assistant Pathologist to the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park; and EVA MORTON, M.R.C.S., L.R.C.P., late Assistant Medical Officer, Grove Hospital, Tooting. London: John Bale, Sons and Danielsson. 1924. Pp. 218. 16s.

THE original French edition of this book appeared some 18 months ago and British readers now possess the advantage of a well-prepared English edition. The work is divided into three parts, the first dealing with the bacteriology of the pneumococcus, the second with the habitat of the pneumococcus and diseases of pneumococcal origin, and the third with the treatment thereof. Of these three sections the first is the most interesting and original. The authors have encountered the difficulties which beset all bacteriologists in defining the really essential unvarying characteristics of the true pneumococcus, and on the whole they incline to the four tests of non-motility, absence of spores, presence of a capsule, and staining by Gram's method as the four most dependable means of bacteriological diagnosis. Probably most laboratory workers will agree with the opinion expressed, that when a wrong diagnosis is made it is usually in mistaking a pneumococcus for a streptococcus. Several new media are described for the cultivation of the organism, the basis of them being Chapoteant's peptone which contains albumoses and peptone. To the use of this preparation the authors ascribe their success in carrying on subcultures indefinitely with medium T, a peptone water containing salt and glucose (pH value varying between 7·2 and 7·5); furthermore, with a modification of this medium in gelatin the authors have been able to keep pneumococcal cultures alive in the ice chest for many months. Solubility in bile the writers do not regard as an altogether reliable test. With regard to pathogenicity tests, they advocate isolation of the pure culture first rather than the injection of the original pus or sputum into animals.

Undoubtedly the most important—and at the same time the most difficult—section in this part of the book is the long section dealing with the subjects of immunity and agglutination, and the translators are to be congratulated on the careful way they have rendered this intricate portion into English. Many interesting points are raised. In the hands of these workers living cultures of a virulent strain of pneumococcus proved to be an unsatisfactory method of inducing active immunity in animals, whilst dead cultures of a non-virulent strain was practically devoid of antigenic properties. A killed virulent culture generally conferred immunity against a variable number of strains and, broadly speaking, the antigenic power of the pneumococci tested varied with their virulence. In this way a multivalent serum could be obtained. A method for standardising a unit of virulence in animal experimentation is also described. In the second part of the book, dealing with the habitat of the organism and diseases of pneumococcal origin, a critical discussion is included on the paths of infection in pneumococcal diseases, notably pneumonia, on infectivity and contagion generally, and on the possibility of pneumonia carriers; whilst the crisis in pneumonia and the mechanism of its production is considered at length. Part III., on the treatment of pneumococcal diseases, is deliberately confined by the authors to specific immunological forms of therapy, and no attempt is made to discuss the ordinary palliative treatment of clinical medicine. After experience of serotherapy, the authors write of antipneumococcal serum: "We do not imagine that the preparation of the serum has been brought actually to the point of perfection, or that it is always administered by the best route and in sufficient quantity, and only to cases in which its use is justified. It would be injurious to the method to ascribe to it successes which are not due to it, but we firmly believe that in a number of cases the serum is definitely beneficial." With this careful estimate most English workers who have used serum would probably agree.

The English translation is a lucid, accurate, painstaking piece of work. All references in the extensive bibliography have been confirmed and the list brought up to date by the inclusion of references to work published since the appearance of the French edition. The translators have also wisely adjusted the loose terminology existing in the description of the types of pneumococci, so that the erroneously named Type IV. receives its proper designation Group IV., inasmuch as it is not, in reality, a type but a heterogeneous collection of organisms of the pneumococcus class.

PEDIATRICS FOR NURSES.

By JOHN C. BALDWIN, M.D., Lecturer in Pediatrics, Johns Hopkins Hospital School for Nurses. New York: D. Appleton. 1924. Pp. 261. 7s. 6d.

THE amplification of the curriculum of nursing studies which has taken place in recent years has resulted in the need of considerably more detailed text-books. This need is well provided for by this book, in which Dr. Baldwin has embodied several courses of lectures to nurses at Johns Hopkins Hospital. The author emphasises the fact that one of the principal duties of the nurse is to observe, and he has provided a text-book which presents a fairly detailed description of the external signs of disease in children. The instructions for feeding and management are lucid and concise, and essentially practical. A considerable portion of the book is devoted to acute disease, the exanthemata being described somewhat fully and illustrated by charts. This work does not completely cover the syllabus of the General Nursing Council in this country—rheumatism and chorea, for instance, are not included—but the book as it stands is so admirable that it may be strongly recommended to nurses as a supplement to a general text-book of nursing.

ORTHOPÆDICS.

Die Amputationen und Exartikulationen unter besonderer Berücksichtigung des Kunstgliederbaues. By Dr. TH. KÖLLIKER, Professor of Orthopædics. Leipzig: J. A. Barth. 1925. With 39 illustrations in the text. Pp. 68. 2.70 gold marks.

THIS brochure is intended for surgeons and students. It may be of value in Germany to those who cannot have access to other or larger works on its subjects, but as it consists of little more than general considerations and gives few details it can be of little use to the medical man who wishes for information on the prosthetics of a hip-joint amputation—to take only one instance. But one artificial limb for the lower extremity is illustrated, and very few arms, the only one for above elbow amputation being the Carnes' arm. In his preface the author recommends Schmieden's and Gocht's works to his readers. We endorse this recommendation, for Dr. Kölliker's pamphlet will hardly satisfy their needs.

INTERNAL SECRETION AND THE DUCTLESS GLANDS.

Third edition. By SWALE VINCENT, M.D., F.R.S., F.Z.S., Professor of Physiology in the University of London, Middlesex Hospital Medical School. London: Edward Arnold. 1924. Pp. 463. 25*s*.

IN adding a selected bibliography to this third edition the author has done a wise thing. There is also added a good deal of matter dealing with the pancreas and insulin, with the reproductive organs and the question of rejuvenation, and a short chapter on organotherapy. Prof. Swale Vincent takes up a conservative attitude with regard to the latter, and also towards "the whole fabric of vagotonia and sympathicotonia, so dear to the credulous physician." The book is full of valuable information.

AIDS TO SURGERY.

By JOSEPH CUNNING, M.B., B.S., F.R.C.S. Eng., Surgeon to the Royal Free Hospital; and CECIL A. JOLL, M.S. Lond., F.R.C.S. Eng., Surgeon to the Royal Free Hospital and Lecturer on Surgery and Operative Surgery at the Royal Free Hospital Medical School. London: Baillière, Tindall and Cox. 1924. Pp. 434. 4*s*. 6*d*.

A VOLUME which can count five editions and many reprints has reached a secure point of reputation. Criticism would be superfluous were it not that, in a subject so fluid as surgery has shown itself to be, only constant revision can possibly keep up to date such a volume as "Aids to Surgery." The authors have succeeded in keeping abreast of modern methods and in maintaining the high standard of previous editions. The volumes of the "Aids" series are not intended to be exhaustive, but they help the student to epitomise his knowledge and to arrange it in an orderly manner. The student who thus fairly uses the present volume will undoubtedly find it of real value, using it as a skeleton into which he can build the knowledge he has gained. The student who uses it unfairly as a text-book will, we sincerely hope, meet at the hands of his examiners the retribution he justly merits.

We have only two suggestions to offer: One, that the admirable preface to the first edition, acknowledging the great text-book of Rose and Carless as the basis of the epitome, should be replaced; the other, deeply though we should regret the loss of such a landmark, that the heading of Chapter XXXII., which deals with the whole of abdominal surgery, should no longer be "Injuries of the Abdominal Walls."

INTELLIGENCE TESTING.

Methods and Results. By RUDOLF PINTNER, Ph.D., Professor of Education in Teachers' College, Columbia University. London: University of London Press. 1924. Pp. 406. 7*s*. 6*d*.

ONLY a few months ago a report on psychological tests was issued by the Board of Education, in which a general survey was attempted of the work done so far on this subject. Now, from the other side of the Atlantic comes this book with a somewhat similar aim from Prof. Pintner, already well known as the joint author of certain intelligence tests of the performance type, suited for application to those who for any reason have difficulty with the use of language, such as the deaf, the immature, and the foreign-born.

The book is designed for use as a text-book by students of the subject, and as such marks an epoch in its history. After a short historical sketch and a rather inadequate discussion of the nature of intelligence, the author gives an outline of the chief tests now in use. This outline is necessarily abridged and requires to be supplemented by study of the literature referring to each scale, of which a very complete list is provided. The largest section of the book deals with the results of the application of the tests to certain definite classes—the feeble-minded, the delinquent, the school-child and college student, the super-normal, the deaf, the blind, the employee, and the specifically American problems of the Negro and the alien immigrant. On the whole the judgments expressed are well-balanced without the enthusiastic and uncritical dogmatism which marred some of the earlier American literature on intelligence tests. There is candid recognition of the fact that interpretations of results must be carefully guarded. In dealing with the feeble-minded, Prof. Pintner, as a psychologist, naturally favours a psychological diagnosis by mental age, and suggests that those whose defect is on the side of temperament and character should be classed as "psychopathic." The statutory English definition of feeble-mindedness, however, compels us to base our diagnosis on "social incompetence," which may be due to either or both of these causes. One can readily sympathise with his summary dismissal of the idiots savants of the older medical literature as not idiots and "far from being savants."

Dr. P. B. Ballard, in an introduction to this English edition, pays tribute to Dr. Pintner's "honourable part" in the development of the subject of the book.

JOURNALS.

ANNALS OF MEDICAL HISTORY. September, 1924. New York: Paul B. Hoeber. $2.50.—Among the papers in this number the most noticeable are A New View of Elisha North and His Treatise on Spotted Fever, by Dr. F. L. Pleadwell; the Siamese Twins of Espanola, by A. P. Chavarria and P. G. Shipley, being an account of the first known post-mortem examination in the New World; and An Unpublished Letter of Sir Thomas Browne, by Dr. E. Moschowitz. Elisha North (1771–1843) was a practitioner who was in advance of his time. He preached and practised moderation in bleeding and in the excessive use of mercurials. He laid stress upon the importance of good nursing and was one of the first medical men in America to advocate vaccination. However, he had his weak side, a side which is shown by a manuscript examined by Dr. Pleadwell. This consisted of notes made by North for a second edition of his "Treatise on Spotted Fever"—i.e., epidemic cerebro-spinal meningitis. In this MS. North expresses the view that spotted fever and cholera are both manifestations of one disease, which he calls congestive asthenia. Despite these views his treatment of spotted fever by stimulation instead of copious bleeding and sweating was very successful.—The paper on the Spanish "Siamese" twins is chiefly noticeable for the reason that the post-mortem examination was carried out mainly for the purpose of deciding whether the twins had two souls or one and the decision was in favour of the former hypothesis.—The letter of Sir Thomas Browne fills up a gap which has hitherto existed in Browne's correspondence as known up to now. In the autumn of 1658 Mr. W. Dugdale (afterwards Sir William Dugdale) wrote to Browne for information about the draining and embanking of fen country. On Dec. 6th, 1658, Browne writes to Dugdale promising him the information in a few days, and the MS. which came under Dr. Moschowitz's notice is the letter in question, dated Dec. 11th. Dugdale embodied most of it in his work, "The History of Embanking and Draining, &c." The letter, of which a facsimile and transcript is given, is in Browne's best style.—Mr. Warren R. Dawson, F.R.S., contributes some medical notes from Herodotus, but he has omitted one of the most interesting, namely, the passage in Book II., Chapter 95, about the Egyptian fisherman's use of a mosquito-net.

THE LANCET.

LONDON: SATURDAY, JANUARY 24, 1925.

POLIO-ENCEPHALITIS.

IN another column Dr. E. A. B. POOLE, medical officer of health for Taunton Rural District, has recorded two or three cases of acute and fatal nervous disease occurring recently in his area, and has assigned to them a tentative diagnosis of acute polio-encephalitis. At the same time he has expressed dissatisfaction with the term, and is evidently conscious of no little confusion in dealing, as a medical officer of health, with a disease notifiable under Ministry of Health regulations and yet not apparently conforming to what is described in the publications of that Ministry. We are not surprised at the difficulties encountered by Dr. POOLE, nor, indeed, at his seeming failure to derive diagnostic help from certain Government reports.

Etymologically, polio-encephalitis stands merely for inflammation of grey matter in the brain, and quite lacks topographical and pathological specificity. Any inflammatory process invading grey matter is in reality a polio-encephalitis. The disease usually designated epidemic encephalitis is not defined thereby, nor would it be by applying to it the former expression, for encephalitis is as non-specific as polio-encephalitis, while the affection does not occur solely in epidemics. Still less is it adequately labelled as lethargic encephalitis, since lethargy may be altogether absent from the clinical picture. There are, as is well recognised, types of this disease in which the unknown virus exhibits a tendency to locate itself in certain collections of grey matter in the base of the brain; the numerous examples of post-encephalitic Parkinsonism that are seen to-day furnish proof of this contention, since there is good pathological evidence to attribute the symptoms to the incidence of the toxin or organism on the corpus striatum and its efferent systems. Conceivably, therefore, we might speak of an epidemic polio-encephalitis. On the other hand, however, polio-encephalitis has for years been the accepted terminology for a comparatively rare invasion of certain mesencephalic or pontine nuclei notably as a result of persistent alcoholic excess (Wernicke's polio-encephalitis superior hæmorrhagica), as well as for those by no means uncommon cases of acute poliomyelitis in which the virus has implicated brain as well as cord, and for which the expression polio-encephalo-myelitis has frequently been employed. In practically all widespread epidemics of poliomyelitis this variety is met with, as was fully discussed by the late Dr. F. E. BATTEN in his Lumleian Lectures of 1916, and has been mentioned by numerous other authorities. Even in the ordinary sporadic instances of the affection one occasionally encounters a case with cranial nerve or other encephalic involvement. It is not impossible that some of the rare cases of sudden death in children following an indefinite malaise are due to an unrecognised polio-encephalitis of the bulb—that is to say, a poliomyelitis whose incidence has been on medullary centres. The other acute infections of the nervous system that might be here mentioned include acute ascending meningo-myelitis, Landry's paralysis, and acute toxic polyneuritis. Round Landry's paralysis much controversy has raged, nor can it be asserted that the problem is solved. That, clinically speaking, there is an acute ascending motor paralysis which implicates proximal rather than distal limb segments and which occurs with or apart from epidemics of poliomyelitis must be accepted; the difficulty is to determine its pathological specificity. The disease called acute ascending meningo-myelitis differs from Landry's paralysis in its involving the cord funiculi indiscriminately, hence the concomitance of sensory and sphincteric disorders; on occasion it spreads to the brain, even to the optic chiasma, so that the clinical picture of a medullary or pontine or mesencephalic polio-encephalitis may be produced. Possibly this rare affection is a sort of ascending spinal lymphangitis, but in any case differentiation from other acute spino-cerebral lesions is obviously not easy except in clearly cut instances. An acute toxic polyneuritis may readily implicate vital respiratory and circulatory neural mechanisms and prove rapidly fatal without revealing itself in the periphery of the limbs to any notable extent. Apart entirely from the conditions enumerated above, the neurologist sees cases of infantile cerebral hemiplegia or diplegia which, by exclusion of syphilitic and traumatic and other morbid processes, he sets down to a polio-encephalitis of unknown origin, a polio-encephalitis not to be facilely interpreted as a mere variety of acute poliomyelitis, since the cases seem to make their appearance at any time of the year and without any seasonal incidence. As a general rule, the child becomes unwell, probably develops a few fits, unilateral or otherwise, and is then seen to be paralysed on one side.

Obviously, then, amid these cross-divisions the seeker for diagnostic exactitude and the nomenclature purist alike will find themselves beset with difficulties. The trouble has arisen largely through the continuance of a pathological term by usage when it no longer fulfils the postulates that precise terminology demands; Dr. POOLE'S interesting cases, in fact, raise more than one problem of practical importance. It is regrettable that the exigencies of the occasion, their brief duration, and the uncertainty of their character or prognosis, naturally precluded that minute and searching neurological investigation which they deserved. The absence, too, of subsequent microscopical examination, or at least the fact that Dr. POOLE makes no allusion to this, renders speculation as to their ætiology and pathology more than a little futile. From the clinical description a diagnosis of acute polio-encephalitis seems justifiable; from the pathological, the data are incomplete. Were histological confirmation of an inflammatory encephalic process forthcoming, the exact diagnosis would still be awanting, for the simple reason that we cannot always, or often, determine the nature of the postulated virus by the type of tissue-reaction. A pathological classification is preferable to a clinical one, but the pathogenic is superior to both. Until we know the features, cultural and otherwise, of the virus which we presume underlies epidemic encephalitis and of those which we imagine, similarly, are responsible for the other types of encephalitic and polio-encephalitic cases mentioned above, we shall have as much difficulty in differentiating our clinical material as the internist formerly had with alimentary infections of a typhoid type. In respect of acute poliomyelitis a more advanced stage has been reached, ætiologically and bacteriologically, and the same is true of those cases we have called polio-encephalo-myelitis. The strains of the coccus of epidemic cerebro-spinal fever, similarly, are known and are recognisable; but when we come to polio-encephalitis pure and simple, we can get at

present no further. We are not inclined to class epidemic encephalitis, still less the rarer affections to which allusion has been made, as sub-varieties of an all-embracing influenza, and the question of a pleomorphic organism behind these varying manifestations of brain inflammation is not, we believe, anywhere within reach of a solution. In a recent communication Prof. A. J. HALL, of Sheffield, has argued for a synthetic as opposed to an analytic approach to the encephalitis problem; but a consideration of the vexed matters which we have been discussing will, we think, convince the physician that the work of analysis must be prosecuted further ere the synthetic stage can be entered on with advantage.

"ELECTRONIC REACTIONS."

AT a joint meeting of the Sections of Medicine and Electro-Therapeutics of the Royal Society of Medicine on Friday last (Jan. 16th), Sir THOMAS HORDER, speaking on behalf of himself and his colleagues, Dr. C. B. HEALD, Colonel H. P. T. LEFROY, Mr. WHATELY SMITH, and Mr. M. D. HART, read an account of an investigation into the Abrams technique and the related procedures of Dr. W. E. BOYD, the general title of the paper being "Electronic Reactions." We publish elsewhere an account of the meeting. The decision of the Sections to give a hearing to the communication was taken, we understand, with some reluctance, inasmuch as the alleged discoveries of ABRAMS formed the avowed starting-point of the investigation, and these discoveries have appeared hitherto to the medical profession to present no points worthy of discussion, the claims of healing being unprecedented and uncontrolled, and the underlying physical manifestations being inexplicable upon scientific grounds. The communication read by Sir THOMAS HORDER, which may be regarded as a report from himself and his colleagues upon "Electronic Reactions," suggested that while the labours of ABRAMS were of no account, those of Dr. BOYD at Glasgow, which had their starting-point in ABRAMS'S work, presented features that it would be wrong not to discuss, in view of possible developments. In those circumstances it will no doubt have been a disappointment to those engaged in the new investigation that, when a meeting of two Sections of the Royal Society of Medicine had heard the report they decided not to allot a date for debate on the questions involved.

The question therefore arises whether more harm than good has been done by the reading of the report, versions of which have already made their appearance in the lay press, upon which reflections have been founded of a misleading character. The authors of the report find that "electronists" using the Abrams technique have exploited the public, but the public on reading the report, or summaries of it, may not recognise the distinctions between the Abrams technique and the Boyd technique as fundamental, and may consider that some new and mysterious agency, related to the researches of ABRAMS, has now been recognised as at any rate containing therapeutic virtues. It is true that the report contains the clearest possible statement that there is no justification whatever for applying the alleged discoveries to the diagnosis or the treatment of disease, but what is to make the public accept this statement? And what is to make certain practitioners feel that "Short 's the friend not Codlin," and accept the implied condemnation of their present activities? The reply of Sir THOMAS HORDER and his colleagues here would be (or might be) that their considered report on the whole subject ought to force "E.R.A." practitioners to submit their work and results to carefully controlled experiments, as Dr. BOYD has done with his work at Glasgow. But we doubt the falling out of this position, for those who do not desire any scrutiny of the sort may consider that they have been judged already, and now prefer to point for their answer to results which they are prepared to claim without further support.

Dr. BOYD has allowed Sir THOMAS HORDER'S committee every opportunity for making and controlling full inquiry, and in this they were assisted at one period by the research officer to the Society for Psychical Research, as representing the highest available authority on the subject of conscious or unconscious trickery. All the investigators seem to have been satisfied with the conditions, and to feel justified in stating that certain substances, when placed in proper relation to Boyd's "emanometer," produce changes in the abdominal wall of the subject of a kind which may be detected by percussion. They point to figures as showing that such detection must connote real differences upon percussion and cannot be dependent upon chance. Our opinion is that the researches ought not to have left the cradle of a physical laboratory. The work is not ready for clinical experiment, while to anything like open debate in medical circles, the want of common grounds of accepted medical knowledge, and even of a generally accepted nomenclature, appear as fatal drawbacks. The absence of any claim to therapeutic advancements in connexion with "electronic reactions" indicates that the alleged findings should be tested in physical laboratories.

ANTI-VENEREAL PROPAGANDA.

THE existence of two societies concerned with propaganda and educational effort directed to the diminution of venereal diseases has been evident for several years; and the clashing between these bodies and the competition between them for public favour have undoubtedly been inimical to the object which is common to both. The Trevethin Committee was appointed to consider the possibility of combined action, and in due course reported in terms with which both the National Council for Combating Venereal Diseases and the Society for Prevention of Venereal Disease expressed satisfaction. Thereafter a liaison committee representative of both societies was formed, and in the first instance agreed on a memorandum which embodied the chief educational objects of the two societies. From the viewpoint of the first-named society their representatives must have felt considerable difficulty in agreeing to its contents, though if these are taken in their context no serious objection need be raised. The signature of this memorandum was justified by the importance of securing the limitation of propaganda as to personal disinfection to selected persons, or to persons definitely asking for advice on disinfection; and by the association in all printed matter with this advice of moral counsel and warning as to the dangers of promiscuity, whether disinfection is employed or not. A subcommittee of the above-mentioned liaison committee was further instructed to explore the legal possibilities of amalgamation between the two societies; and after legal consultation we are informed that the difficulties in the way of this were found not to be serious. The scheme for amalgamation which was prepared has not, however, been discussed, as, on further consideration, the Society for Prevention of Venereal Disease, at a recent meeting

of their executive committee, decided that fusion between the two societies appeared impracticable in view of the constitution and incorporation of the National Council, and that in their view combined action by coöperation remains the most practical and advisable policy. This decision is regrettable; but in view of its decisive character it becomes necessary to fall back on such coöperative counsel between the two bodies as may be feasible. Were it practicable for Sir AUCKLAND GEDDES, the president of one, to consent to become the president of both societies, the prospect of such coöperation might be bright. In any case the liaison should remain.

Meanwhile, there necessarily will arise questions on which combined Parliamentary representations may be made, and others on which consultation will be desirable on points on which there is common agreement. The importance of the varied educational work of the National Council, which is rapidly increasing in scope, cannot be exaggerated. Nor can there be doubt as to the desirability of giving exact scientific advice as to disinfection to persons requiring it, and of enabling druggists to sell materials for this purpose, embodying the exact advice just indicated, along with warning against exposure to the need for using it. The exact limitations of such advice are not likely to be finally settled until or unless the Ministry of Health make a definite pronouncement on this subject. The position demands this, and we trust that it will soon be given. When these conditions are fulfilled, we may hope that less will be heard of ardent propagandism in any special limited direction; that the problem of prevention of venereal disease will be viewed as a whole; and that all branches of preventive work, including a larger share of general social educational work, will get attention.

ISO-PROPYL ALCOHOL AS A SUBSTITUTE FOR METHYLATED SPIRIT.

RECENT modifications in the composition of methylated spirits introduced by the Excise authorities are of far-reaching importance, and from the standpoint of the legitimate user of the spirit they can only be viewed as deplorable. The addition of a small quantity of dye-stuff a few years ago was a subject for regret to many, but the recent addition of pyridine to the denaturants used is a far more serious matter. Pyridine is sufficiently irritant to the skin to render the use of the spirit containing it unsuitable for the preparation of lotions, or for washing the skin prior to operations, or for use in a hypodermic syringe. Industrial methylated spirit may be free from these drawbacks, but the restrictions surrounding its employment place it outside the reach of the practitioner. It seems almost impossible to suggest a denaturant which could be added to the spirit which would satisfy both the demands of the revenue authorities and the requirements of the legitimate user. The most important of these latter requirements is, of course, freedom from irritant or toxic action, while miscibility with water is also a most desirable characteristic. At the present time the best way out of the difficulty appears to be found in the use of iso-propyl alcohol. This substance, which can be manufactured by the reduction of acetone, resembles ordinary ethyl alcohol very closely in its properties, being almost identical in boiling-point, density, odour, and miscibility in water, and having very similar solvent properties. In these respects it is more akin to ethyl alcohol than to its own isomer, normal-propyl alcohol. Furthermore, it appears to be free from toxic and irritant action, and is quite suitable for all purposes for which the old methylated spirit or the modern industrial spirit could be used. Indeed, its toxicity is probably a great deal less than that of methylated spirit.[1] The technical product contains about 95 per cent. of the alcohol and is available under various names, such as "avantine." The only real drawback seems to be that of price—namely, about 40*s.* to 45*s.* per gallon; but this is, of course, considerably less than that of rectified spirit, duty paid. Iso-propyl alcohol is also made in America from natural gas, but there do not seem to be any available data as to the physiological purity of the alcohol from this source.

Annotations.

"Ne quid nimis."

CORRECT POSTURE.

POSTURE is defined as the relative disposition of the various parts of anything and in a special sense as the position and carriage of the limbs and the body as a whole. In a more limited sense the word is used by Mr. Muirhead Little, in his article (see p. 197) on the Treatment of Postural Defects in Children and Adolescents, to mean the habitual attitude of the body and limbs when not in movement and especially in the upright position of the trunk. Postural defects are such faults of attitude as are not connected with permanent structural deformity and, in general, can be corrected by the patient's volition or by the application of small outside forces. As in the erect position posture must be affected by the position and form of the supporting lower limbs, it becomes necessary to take into consideration the condition of the feet and legs, seeing that equilibrium is only possible when a vertical straight line passing through the centre of gravity falls inside the boundaries of the supporting base. According to experiments made by Reynolds and Lovett,[2] this line falls normally just in front of the ankle-joint and the knee-joints, in front of most of the vertebral joints, and probably also in front of the hip-joints, although these latter are so situated that this position is only inferred from experiments made upon the dead body. This disposition of the joints as regards the centre of gravity enables the erect position to be maintained with a minimum of muscular action, owing to the existence of strong ligaments upon which much of the strain is thrown. To the question as to what is the normal erect posture there is no definite answer, for while all observers will agree that certain postures are abnormal, few will agree as to the exact degree of curvature in the several regions of the spinal column which constitutes abnormality. It is well known to sculptors and students of ancient art that the male Greek figure, as represented in such statues and reliefs as have come down to us, differs considerably from the best models of modern times. The difference would seem to consist chiefly of a greater sharpness of the lumbo-sacral angle. The tracings reproduced from photographs of statues and casts in the British Museum in Mr. Muirhead Little's article show this peculiarity, which seems to manifest itself in male figures only. We have no means of knowing whether these sculptures were true to nature or not, but at least they show that the ideal of manly beauty in the time of Pheidias differed from that of the orthopædic surgeon of to-day. In the United States attempts have been made to establish a normal standard by the examination of a number of healthy young men at the beginning of their university course. Dr. Lloyd T. Brown,[3] of Boston, has published the results of an examination of 746 freshmen at Harvard

[1] Martindale and Westcott: Extra Pharmacopœia, eighteenth edition, p. 131.
[2] Reynolds and Lovett: Jour. Amer. Med. Assoc., March 26th, 1910; Amer. Jour. Phys., May 1st, 1909.
[3] Lloyd T. Brown: A Combined Medical and Postural Examination of 746 Young Adults, Amer. Jour. of Orthop. Surg., 1917, xv., 774.

and Dr. Robert Cook [1] those of 1393 at Yale University, but without establishing a really definite standard. Lloyd Brown, however, divided his cases into four grades, A, B, C, and D. Only about 7 per cent. of his cases were found worthy of Grade A. Figs. 5 and 6 (see p. 198) show this type standing at attention without conscious effort (5) and when he has been asked to correct his posture (6). In a later paper by Lloyd Brown and Roger I. Lee, dealing still with Harvard freshmen, rather different outlines are given as typical of the four grades, thus showing that the standard of normality is not yet quite established. It was found that in the highest grade a straight line drawn from the tip of the external malleolus to the middle of the great trochanter, if continued upwards, would pass through the shoulder (head of the humerus ?) and the front of the external ear.

THE GREAT PLAGUE.

"What eye would not weep to see so many habitations uninhabited, the poor sick not visited, the hungry not fed, the grave not satisfied? Death stares us continually in the face in every infected person that passes by us, in every coffin which is daily and hourly carried along our streets."

SUCH was the impression made by the Great Plague upon an official of St. Paul's Cathedral, by name John Tillison, and chronicled by him in a letter to Dean Sancroft. Many books have been written about the plague of 1665, some from the medical side, as, for instance, "Loimographia," by William Boghurst (an admirable edition of which was edited by the late Dr. J. F. Payne for the Epidemiological Society), "Loimologia," by Dr. Nathaniel Hodges, and "Loimotomia" by Dr. George Thomson, who has left us the sole record of a post-mortem examination upon a plague patient. In fiction there is, of course, Defoe's "Journal of the Plague Year" and Ainsworth's "Old St. Paul's." But for a carefully documented and vividly written historical account of the plague we must allow that Mr. Bell's recent book [2] is the best that we have seen, taken as a whole, and is a fitting companion for his other book the "Great Fire of London." Mr. Bell apologises in his preface for the quantity of references with which he says his pages are peppered. For our part we consider that no apology is needed and we only wish that more writers would give their references as carefully. Mr. Bell has an extraordinary flair for picking out illuminating passages from the writings of his authorities. Quite early in the book (p. 59) we find the following remark in a letter from Sir Robert Long, auditor of the Exchequer, to his clerk :—

"I pray you use all possible care to preserve yourselves and my house. . . . Lett not the porter come into the house; take all course you can agaynst the ratts, and take care of the catts; the little ones that will not stirre out may be kept, the great ones must be killed or sent away."

Long evidently had some idea that "the ratts" were a source of danger, and it is curious that he should not have seen that his cats might have been valuable assistants, even though, as is possible, they might have conveyed infection. The two regions of London where the plague was at its worst were St. Giles in the Field and the other parish of St. Giles —namely, Cripplegate—both being poor quarters. Cripplegate lay in a waterlogged situation, where shallow ditches were clogged with filth, and in addition the great laystall in Moorfields, where all the rotting garbage from the streets was raked together, formed an ideal attraction for rats. Against this laystall the College of Physicians had protested in 1636, but nothing was done. Plague having obtained foothold, its spread was rendered easier by the mistaken policy of shutting up houses with all their inmates directly one case of plague occurred therein, a policy which, it is sad to say, was endorsed by the College of Physicians. As in all epidemics, there were instances of both cowardice and heroism on the part of the clergy and the medical profession, and Mr. Bell gives many details in pp. 223–226 and p. 290 respectively. A horror lay over the city, and as in Egypt of old there was scarce a house where there was not one dead. Mr. Bell is rightly severe upon the Court, which retired to Oxford, leaving Albemarle to do his best for stricken London, together with Lawrence, the Lord Mayor; and admirably they did their work. He also gives with hardly-veiled satire Evelyn's description of the Fellows of the Royal Society meeting at the Durdans, where he found Dr. Wilkins, Sir William Petty, and Mr. Hooke contriving chariots and other mechanical inventions. In one respect Mr. Bell has departed from his eminently "indifferent" treatment of his subject, for he goes out of his way to lament the sufferings of the Nonconformist ministers who were ejected on St. Bartholomew's Day, 1662. It is a matter which has but little to do with the Plague, and granted that the ejected ministers had grievances, it must also be remembered that most of them had been intruded into the livings when the rightful holders had been turned out by Parliament in 1640 and later. Granted, too, that the Conventicle Act and the Five Mile Act were oppressive, as they undoubtedly were, the latter was only an extension of an ordinance of Parliament dated August 19th, 1643, whereby one-fifth of the profits of their livings might be granted by sequestrating committees to the turned-out clergy, but on condition amongst others that they must remove out of the parish. Mr. Bell has, we see, read Calamy's book on "Non-Conformity," and we imagine that so learned a man as he must have read Walker's "Sufferings of the Clergy." The 2000 ministers who were ejected at Black Bartholomew-tide were not all learned and saintly men, though it is true that some were really sufferers for conscience' sake. But many were not in Holy Orders, and others we find from Calamy were illiterate. Thus, on p. 731 of Volume II. of the 1713 edition of Calamy, we find Mr. Ellis, a skinner from London, Mr. Miller, a London bookseller, Mr. Miles and Mr. Froude, both Anabaptists; on the next page Mr. Jones, an honest plowman, Mr. Jenkyn Jones, a Catabaptist, Mr. Joseph, who "spoilt an ingenious husbandman to become an Ignorant Preacher," and lastly Mr. Thomas, who "turn'd a drunken steward." But when Mr. Bell is writing of the Plague and its attendant horrors he is admirable.

THE SUPERIORITY OF THE NON-SMOKER.

Dr. Rosslyn Earp's statistical inquiry at Antioch College, Ohio (U.S.A.), which we publish on p. 213, shows that while the non-smoking students of the College do not come out better than the smoking students in the ordinary cardio-vascular tests, yet in practice the non-smokers are the better athletes and show a better record of scholarship. We agree with him that the size of the population examined justifies the conclusions drawn, but it will certainly be urged that the population, as selected, may have bias apart from the tobacco habit. Athletes, as a group, do not smoke during training, and before any contest all the best athletes are known to be in the non-smoking group, with the result that that group would win the athletic events. Moreover, experience among school-children suggests that good physical and good mental equipment go together, so that, having placed non-smoking athletes in a group, it is natural to find in that group the better mentalities. Nevertheless, Dr. Earp's grading of Table C is good enough to suggest that tobacco may have some influence per se. A year or two ago an attempt was made on a small scale [1] to compare the mental work of smoking and non-smoking telegraph operators, using output as the criterion. The numbers at risk were few—viz., seven heavy smokers, five light smokers; the heavy smokers did not do so well as the light.

[1] Robert J. Cook: Report of the Orthopædic Examination of 1393 Freshmen at Yale University, Jour. Bone and Joint Surgery (Boston, Mass., U.S.A.), 1922, iv., 247.

[2] The Great Plague in London in 1665. By Walter George Bell, F.S.A. London: John Lane. 1924. Pp. 374. 25s.

[1] Journal of Industrial Hygiene, October, 1920.

Output, again, was the measure in an investigation[1] of a larger group of glass bottle makers in relation to the physical effect of smoking. Smoking had little effect, nothing statistically reliable, but chewing markedly lowered output. There was no cross-influence of athletic training to invalidate the grouping in these inquiries. Examination of Dr. Earp's Table A does not show the regular progression on any observation made, upwards or downwards, moving with the amount of tobacco used, which would be desirable to bring conviction. The heavy-smoker group, in fact, gives results which tend to be closer to the non-smokers than to the moderate or slight. These results do not agree with either athletic prowess or mental capacity, and suggest that in this case pure tests are not being applied. The inquiry, however, is well worth making and the material for it is abundant.

FOOD PRESERVATION BY COLD.

THE dependence of this country upon imported food, much of it perishable food, makes a scientific study of the principles involved in the action of cold upon foods of great practical importance. The Report of the Food Investigation Board[2] for 1923, recently issued, contains, amongst numerous other matters of importance, an account of various studies dealing with this subject.

As regards frozen meat, there are well-recognised defects which detract from the practical utility of freezing and make it inferior to chilling. Actual freezing is, however, necessary for long-distance travel. The essential disadvantage of freezing meat is in the loss of texture when thawed, causing physical alterations and a tendency to drip. The latter is due to a separation of the water previously held within the fibres, which drains away from the cut surfaces, carrying with it some of the nutritive properties of the meat. It has been shown by earlier investigators that this undesirable change can be prevented if the rate of cooling is sufficiently rapid. Such a rapid cooling of beef is not practicable, since no known methods are adequate to achieve it in masses so large as a quarter of beef. To remove the drawbacks of freezing beef it is therefore necessary to try and discover some other method of producing the same effect which would not demand so high a rate of cooling. The best line of attack is to study the scientific principles concerned in the freezing of foods, and these were studied experimentally along a number of different lines.

Eggs were selected as a useful food to study, since previous work had shown that with them factors (such as limiting temperatures) other than the rate of cooling also affect recovery without physical damage. It was found during the year that the yolk may be preserved without sensible change in two ways—either by never allowing the temperature to fall below −6° C., or by freezing and thawing with great rapidity. It is probable that some irreversible change of the nature of a coagulation occurs at temperatures between −6° C. and some unknown lower limit, but does not occur if this critical interval is hurried over with sufficient rapidity. Further light upon the problem was obtained by a study of the changes in a simple colloid system, that adopted being a mixture of gelatin and water. Where such a jelly is frozen and thawed water drips away freely—i.e., there is a definite separation of the water from the gelatin. These problems are still being studied, one interesting line of inquiry being measurements of the rate of advance of a fragment of ice in a cylinder of overcooled (−3° C.) jelly. The rate was found to be constant through the length of the tube, but the rate of advance was influenced by various factors, including the percentage of gelatin. Other studies have been carried out in regard to the autolytic changes in cod under frozen conditions. Foster and Fearon in 1922 found that the autolysis of beef or mutton frozen rapidly in cold brine or mercury was similar to that of fresh unfrozen beef or mutton, whereas if the flesh had been frozen rapidly in air the course of chemical change was strikingly different. These results were confirmed for the cod, and the cause of the difference found to be due to the separation, in muscles which had been slowly frozen, of fluid containing proteins, ferments, and other organic substances in solution. It is this liquid which drips away from the flesh on thawing, and it is in this fluid that the more rapid autolysis takes place. The preservative action on fish of ice containing small quantities of antiseptic was tried, but on the whole the results were not satisfactory, because the flesh became impregnated with the antiseptic.

Another section of the report gives interesting particulars of results obtained by cold in the storage of different fruits. To obtain comparative results it is necessary to have some means of determining the commercial storage life of the fruit. Most of the work was done with apples, and for this and other fruits an arbitrary point for the end of commercial storage life was fixed as the length of time the fruit can be stored before loss due to fungal rots or functional diseases amounts to 10 per cent. In general, the results of work extending over three seasons was a pronounced extension of the commercial storage life of the apple by the action of cold storage due to a retardation and alteration of the natural ripening processes and to the delay or inhibition of fungal attack. In exceptional cases these satisfactory results were not obtained and ordinary storage yielded better results; the causes of this were studied and determined. Experiments with plums were less complete, and have yet to be placed upon a systematic footing. From cold storage trials with strawberries kept at 1° C. favourable results were obtained, and in this way they were kept in good marketing condition for seven and, in some cases, for ten days. When marketed the fruit realised the same prices as fruit freshly gathered. With such a rapidly perishable fruit as strawberries, the practical utility of this work is obvious.

[1] Ibid., May, 1921.
[2] Annual Report for 1923. H.M. Stationery Office. 3s.

TREATMENT OF MALARIA WITH PERACRINA.

AN account[1] of his experiences of the treatment of malaria in the famine districts of the Volga with the new drug "peracrina" has been given by Dr. J. Walker, who is the chief of the Swiss Red Cross Hospital in Russia. Peracrina is manufactured in Berne by the Haco Company in the form of sugar-coated pills, and is a combination of an albuminous substance with trypaflavine. Each pill of 0·5 g. contains one-tenth of trypaflavine. The effects of the absorption of this ingredient become apparent after ingestion of 3 g., the stools becoming coloured yellow and the urine fluorescent. As the result of his experiences in Russia, Dr. Walker believes that peracrina has a distinct and beneficial action on malaria, but that trypaflavine alone, without the albuminous adjunct, is inactive. The series comprised 116 cases, of which 73 were benign tertian, 20 subtertian, and 22 mixed infections. Of these only 25 proved to be resistant to the drug, and the author is therefore hopeful that in peracrina we possess a specific for malaria which may possibly even replace quinine in the treatment of this fever. Further experiments are now being prosecuted in Syria and amongst the refugees in Greece. The dosage is as follows: For children of 3–6 years of age, 4–6 pills representing 2–3 g. of peracrina; from 6–8 years, 6–9 pills (3–4·5 g. peracrina); from 9–16 years, 8–12 pills (4–6 g. peracrina); adults 12–18 pills (6–9 g. peracrina). The course of treatment was extended in some cases over six weeks. A preparation, known as "peracrina 404," and possessing a high iodine-content, was not so active against malaria, and in two cases which proved fatal seemed to give rise to iodine poisoning. It was difficult to follow up the cases, but according to a recent report, out of

[1] Walker, J. (1924): Archiv für Schiffs- u. Tropen-Hyg. vol. xxviii., pp. 540–570.

30–40 patients who had been traced, only two had suffered from a relapse. The discovery of a specific more active than quinine, and shorn of its many disadvantages, would be eagerly welcomed by the profession, but more exact observations controlled by periodic blood examinations are necessary before optimism is justified. A perusal of the temperature charts and protocols in Dr. Walker's paper is not very convincing; we note in several cases the simultaneous exhibition of quinine hydrochloride had to be resorted to before resolution of the fever took place.

PRISONS.

THE report of the Commissioners of Prisons and the directors of convict prisons for the year 1923–24 has recently been issued.[1] It shows that notwithstanding the tendency for an increase in prison population to occur during the years following a war, and the large numbers of unemployed, the total receptions into the prisons of this country have again decreased in number. This in itself is a satisfactory feature of the report, and not less so is the account of the great amelioration of prison conditions which is gradually taking place. Educational facilities, particularly for adults, continue to make progress; there exists now in several of the prisons "clubs" or "honour parties" who hold meetings at which games are played and debates take place, and lectures, concerts of good music, &c., continue to play a part in the routine of the modern prison. The work at the Borstal institutions shows further improvement; at each of the three main boys' institutions—Borstal, Feltham, and Portland—there are now four houses each in charge of a housemaster, and the influence of a matron also helps the boys in the direction of their lives towards useful citizenship. It is interesting to learn that the officers of these institutions are now wearing plain clothes and the discarding of uniforms has had no untoward effect on the discipline. Although, as the report points out, this may seem a small matter in its beginnings, it is "one which may go far to promote the real spirit of a training school." A committee has been set up to consider the question of diet. The medical commissioner, Dr. G. B. Griffiths, also calls attention to the conservative treatment of prisoners' teeth. He suggests that long term prisoners would greatly benefit in health and well-being if an inspection and necessary fillings were carried out at the beginning of a sentence. The high state of general sanitation of the prisons is indicated by the small number of cases of infectious diseases notified during the year; four cases were reported from the local prisons and two from Borstal institutions. So far, then, the report seems fairly optimistic in tone, but there is another side to the picture. Special attention is drawn by the governors of two of the prisons to the increasing number of youths who, unable to find employment on leaving school, have their characters undermined by several years of idleness and drift into crime. This class of criminal, as the medical officer of the Feltham institution points out, is mainly derived from those children who during the war were deprived of the control and guidance of their fathers and were often allowed to run wild with plenty of pocket money; here the absence of male teachers from the schools led to further relaxation of discipline. There is a strong plea from the medical officer of the Birmingham prison for more satisfactory treatment of these young delinquents. Their "criminal" conduct is, he says, only one aspect of abnormal conduct which often has its roots far back in the early years of life. He suggests that abnormal conduct should be looked at as a whole and that the various authorities, those dealing with education, those concerned with the care of lunatics, mental defectives and epileptics, and those working particularly with criminals should coördinate their activities against all forms of "anti-social" conduct. This suggestion seems a sound one and it merits close attention. We quote one sentence from the report in the hope that it will encourage those who give of their scanty leisure to the promotion of social welfare. It is stated to be "rare for a lad or girl to be received into prison who has been a member of a good boys' or girls' club, a boy scout or a girl guide, or a member of the Church Lads' Brigade."

[1] Annual Report of the Prison Commissioners, 1923–24. London: H.M. Stationery Office. Pp. 90. 1s. 6d.

DR. F. J. ALLAN'S RETIREMENT.

AT the beginning of this year Dr. Francis J. Allan retired from the position of medical officer of health for the City of Westminster, and his retirement means the loss of a very able and far-seeing member of the public health service. Dr. Allan acted as assistant to the late Sir Henry Littlejohn, and was some years in practice as a general practitioner before he was appointed medical officer of health for Shoreditch in 1890. Two years later he transferred to the Strand, and when on the creation of the metropolitan boroughs Westminster came into being by the amalgamation of the Strand District, St. George's, Hanover-square, St. James's, St. Martin's, St. Margaret's, and St. John's, Dr. Allan was elected medical officer of the newly formed borough. In 1892 he was appointed lecturer in sanitary science at King's College, and since 1915 he has been lecturer in public health in the Westminster Hospital Medical School. He is one of the trustees of the Society of Medical Officers of Health, of which he has been president, secretary, and editor of *Public Health*, the official journal of the Society. During the war Dr. Allan rendered great assistance to the metropolis as a sanitary expert, and he had the supervision of large numbers of refugees. In recognition of the latter services he was awarded the Albert Medal by the King of the Belgians. Dr. Allan's services to the City of Westminster have been more than merely administrative, and the influence of his work has had far-reaching results. It was through his representations under the Housing Act that the large and formerly unsavoury area (Clare Market) between the Strand and Holborn was condemned and cleared, leading to the formation of the present beautiful avenue of Kingsway. He was also instrumental in forming the first health society in Westminster, which eventually became the model on which other health societies have been formed throughout the country, and which may well be claimed as the foundation of the maternity and child welfare schemes now universally adopted. We are glad to know that Dr. Allan is still retaining his connexion with the Westminster Health Society and other bodies in Westminster, as well as his lectureship in the Westminster Hospital Medical School. The Westminster City Council have placed on record their high appreciation of Dr. Allan's services. It is to his personality that the smooth working of his department has been to no small extent due.

CLASSIFICATION OF MENTAL DISORDERS.

THE Special Committee of the British Medical Association which drew up the Memorandum of evidence to be set before the Royal Commission on Lunacy fully recognised the difficulty of dealing with mental disorders owing to the great variety of conditions presented. Thus the most lasting and grave forms of mental unsoundness may, at their onset, present only a mild type of mental disturbance. On the other hand, some of the most acute forms may be of only temporary duration, almost sure to recover, and possibly unlikely to recur. Then, again, some of the forms are marked by a natural tendency to remission and recurrence with intervals of apparent mental health; others, and these perhaps the most dangerous forms of mental disorder, are very difficult to detect and are carefully concealed by the patient for long periods. There are also chronic forms which

present no dangerous or conspicuously objectionable characters. If the best possible is to be done for the patient as a sick person the facilities for treatment and the types of accommodation must be sufficiently various to suit all these wide differing conditions. The Committee therefore drew up a scheme for the classification of patients suffering from mental disorders, which appears as an appendix to the Memorandum and is here reproduced. The scheme is based chiefly on the well-being of the patient combined with proper care for the safety of the community.

Scheme for Classification of Patients Suffering from Mental Disorders.

Patients not needing to be taken charge of and detained for care and treatment—i.e., not "of unsound mind," but suffering from lesser mental ailments, including simple senile dementia.
Patients proper to be taken charge of and detained for care and treatment—i.e., "of unsound mind."
Patients needing treatment but not in homes, institutions, or hospitals.
Patients needing treatment in suitable homes, institutions, or hospitals.
Those patients who give consent to the necessary measures of treatment: (a) Voluntary Boarders (under Lunacy Act). (b) Temporary Boarders by consent (as provided in Mental Treatment Bill).
Temporary Boarders who are minors or who when given the choice do not refuse to submit to the necessary measures of treatment and are likely to make early recovery.
Those who refuse consent and for whom, therefore, compulsory measures are necessary.
Patients for whom immediate measures are necessary for safety or for their welfare. Provisional Order valid for three days made by near relative or relieving officer.
Patients in regard to whom the final decision is not clear and in whose case a period of observation is desirable. Provisional Order validated for a further 28 days by the Justice.
Patients in need of continued control — Reception Order.

On a later page we print a general summary of the Memorandum and of the evidence given by representatives of the Association before the Royal Commission.

THE CORRECTION OF ASTIGMATISM.

FOR more than sixty years the prescribers of spectacles have been content with finding the cylindrical lens that will correct the corneal astigmatism for distant vision, and they have then assumed that the same cylinder will correct this astigmatism when used for near work. In the current number of the *British Journal of Ophthalmology* Mr. A. S. Percival has shown that this is not the case. The mathematic form of the article will not appeal to the ordinary reader, but the gist of the conclusions is this. If no presbyopic addition be given for close work, the power of the cylinder when used for near work must be increased by about 9 per cent. If a ± 5 D. cylinder corrects the corneal astigmatism for distance, it will require a ± 5·45 D. cylinder to correct this astigmatism for close work. If a full presbyopic correction of + 3 D. sphere be given for reading, no alteration need be made in the cylinder; if a smaller correction, say + 2 D. or + 1 D., an addition of 6 or 3 per cent. respectively will be necessary if the cylinder be of high power. The practical application of Mr. Percival's observation is clear. For weak cylinders the amount to be added is negligible: for instance, a 1 D. cylinder for distance should only become 1·09 for reading. But where high-powered cylinders are required, better visual results for reading are obtained by an appropriate increase in the power of the cylinder.

THE anniversary dinner of the Medical Society of London will be held at the Grand Hotel, on Wednesday, March 11th, at 7.30 P.M.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CVI.

THE TREATMENT OF POSTURAL DEFECTS IN CHILDREN AND ADOLESCENTS.

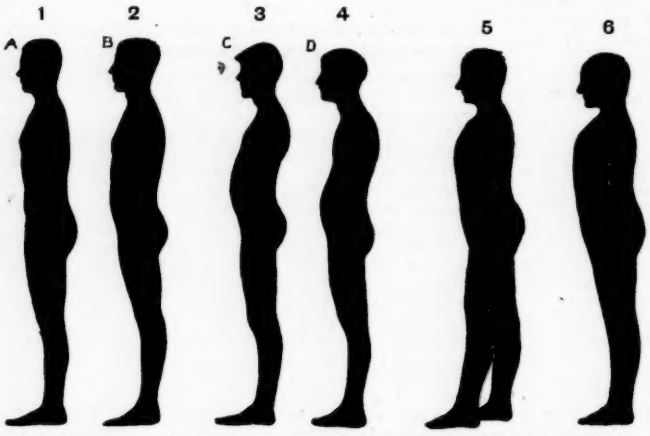
THE spinal column consists of four regions, which are alternately rigid and flexible. From below upwards there are: 1. The rigid sacrum. 2. The flexible lumbar region (including the lowest two thoracic vertebræ) capable of bending in all horizontal directions and of a considerable degree of rotation. 3. The thoracic region, including only the second to the tenth thoracic vertebræ. No appreciable movement is normally possible in this region, although the normal curve may gradually be altered from various causes. 4. The mobile cervical region (including the first thoracic vertebra), in which bending in all directions and some rotation is possible. The regions most concerned in the posture of the body are the lumbar and thoracic, each of which reacts on the other, because to attain or preserve equilibrium an increase of curvature in one region must be compensated by an increase of curvature in the other. The lumbar curve is also affected by the position of the head. An increased lumbar curvature may also be compensated by an inclination of the trunk forwards pivoting on the hip-joints. While the limits of the range of motion are set by the shape of the articular surfaces and the length of the ligaments, the position assumed within those limits depends on muscular action, which is capable in the course of time of enlarging the range of motion in one or another direction. A similar but more objectionable result may be attained by the action of gravity, if unregulated by muscular action.

From what has been said as to complementary curves, and as to the rigidity of the curve in the thoracic region, it would be expected that extensive changes of the figure could only be brought about by long-continued, slowly acting agencies. Actual experience accords with this expectation. The relative strength and tonicity of the muscles constitute the immediate cause of the attitude assumed in the standing-still position. Figs. 1 to 4 represent the grades A, B, C, D, into which R. I. Lee and Lloyd T. Brown[1] divided the Harvard freshmen examined by them in the attempt to establish a normal standard. If the abdominal muscles are over-balanced by the lumbar muscles, an exaggeration of the lumbar curve results. Over-action or contracture of the psoas muscles leads to a like effect. Such relative weakness of the abdominal muscles may be the result of over-stretching by distension of the belly. Muscular fatigue is a common cause of postural defect. Most of us are aware that when we are tired there is a tendency to relax the muscles, and to allow the spine to collapse, throwing all or most of the strain on the ligaments, whereas when we are fresh and vigorous we sit or stand without conscious effort with the trunk and neck well braced up. Incidentally, the degree of curvature in the several regions of the body which constitutes abnormality is not an easy matter to determine, and even the normal posture regarded as ideal varies in different ages (see Figs. 7, 8, 9, 10).

Postural *lateral* deviation of the spine may be due to inequality of length of limbs or to a habit of standing on one leg in the stand-at-ease position. It disappears in the one case when the shortness of the limb is compensated by means of a high boot, or when in the other case the patient stands evenly on both, equally extended, legs. If it does not then so disappear, the deformity, although postural in origin, has gone

[1] Roger I. Lee and Lloyd Brown: Journ. of Bone and Joint Surgery, 1923, v., 753.

further and become fixed. There are also cases in which postural lateral deviation is due to want of tonicity in the muscles allowing the spine to sag to one side, just as it more often does in the direction of the normal spinal curves. Round shoulders, when not due wholly to abnormal curvature of the thoracic region of the spine, represent the direct result of relaxation, weakness, or atony of the scapulo-spinal muscles—that is to say, loss of the normal balance between them and the powerful pectoral group, from whatever cause arising.



Figs. 1 to 4 (from R. I. Lee and L. T. Brown, loc. cit., 1923) represent the four grades A, B, C, D, among Harvard freshmen of the thin type.
Figs. 5 and 6 (from L. T. Brown: Amer. Jour. of Orthop. Surg., 1917. xv., 774), represent a freshman of grade A, of heavy type, standing at his ease (5) and again when told to hold himself up (6).

Postural defects are generally the result of abnormal conditions and not the cause of them, but it must be admitted that if they are allowed to persist they probably aggravate those conditions, and thus a vicious circle is entered upon. The muscular weakness and atony which allow round shoulders and hollow loins and visceroptosis are themselves signs of malnutrition and faulty innervation, and the hygienic treatment which relieves the latter conditions will indirectly correct the postural defects. There is no lightning cure, but the example of army training which can turn the slouching recruit into an upstanding, well-set-up man, shows what may be done by unremitting, well-directed treatment. Good results are only obtainable by oft-repeated and persevering efforts. Flat everted feet must be treated by exercises and the use of proper shoes and boots. Painful affections of the feet may prevent the normal distribution of weight by causing the patient to spare one part of the foot or feet, and to load unduly another part, either of conscious choice or instinctively. Thus, it is a common complaint by the parents of flat-footed children, that they are pigeon-toed, and they are brought to the surgeon because they turn their feet in. In such cases the weak inner side of the foot is unconsciously relieved and its flatness corrected by inversion and concomitant supination of the foot at the medio-tarsal joints. Inequality of length or contraction of any of the joints of the lower limbs may affect the general posture of the body by making it impossible for those limbs to support the centre of gravity of a normally poised trunk and thus necessitating an abnormal poise. Loss of normal muscle-balance acts in a similar manner. For instance, palsy or weakness of the calf muscles is followed by excessive dorsiflexion of the foot and secondary knee and hip flexion. A similar condition of the anterior muscles of the ankle favours excessive plantar flexion, to compensate which the knee and hip are hyper-extended. High heels are accused of causing defects of posture, as well as deformities of the toes. It is open to question whether this accusation is justified. As long as the heels are not so high as to place the foot in a position of such extreme equinus that no further plantar flexion is possible, it is difficult to understand how they can affect the posture of the body.

Inequalities in the length of the lower limbs must be compensated, knock-knee and coxa vara if found must be dealt with, as well as all other remediable abnormalities. The next step is to ascertain what is the best position which the patient can assume voluntarily and to train him so that he may know when he is in that position. For this purpose a large mirror is of considerable value. The patient being placed in front of it in his best position is able to see for himself what it is that he has to do. This is the more desirable because it is not unusual for a patient to put himself in a worse instead of a better posture when first told to hold himself upright.

Fig. 6 shows the effect of a well-directed conscious effort of correction from the position at ease in Fig. 5. When such a position can be maintained indefinitely *without* conscious effort a good deal of progress has been made. Treatment includes every measure that tends to the improvement of health and strength, and excludes all those of a contrary tendency. It is in the stationary erect position that it is most difficult to avoid falling into bad attitudes and lolling, and therefore standing still should be as far as possible avoided, at any rate, in the early stages of treatment. When the patient is not actively occupied he should be seated or recumbent. In this connexion I am of opinion that cricket, which involves, for a large proportion of the players, much standing about doing

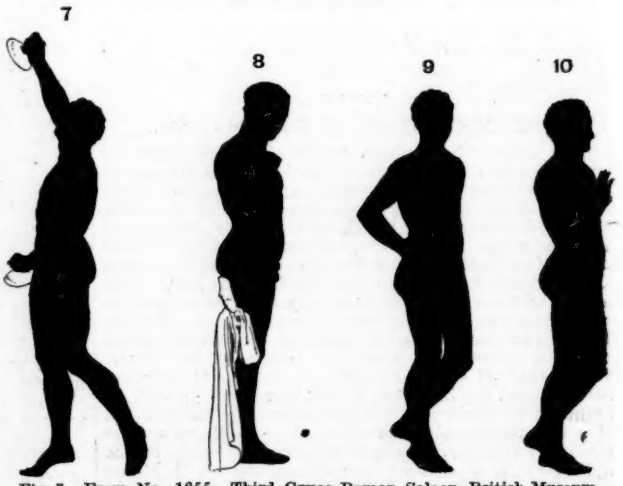


Fig. 7. From No. 1655. Third Græco-Roman Saloon, British Museum. "Satyr dancing. Known as the Rondinini Fawn."
Fig. 8. From No. 120 in the Cast Gallery, British Museum. "A copy of a statue by Polycleites, 2nd half of V. Centy. B.C."
Figs. 9 and 10. From a Votive Relief, No. 2155. "Offering a torch to Artemis Bendis. About 350 B.C."
The above show the Greek ideal of the great period. There is in these a comparatively sharp angle in place of the longer lumbar curve in Figs. 1 to 6.

nothing, is not a suitable pastime for the subject of postural defect.

The Form and Dimensions of Chairs.

The form and dimensions of chairs are of great importance. Much has been written on school chairs and desks, and many patterns have been recommended, especially in the United States. The desiderata in a chair for reading differ much from those in a chair for desk-writing. The first should have a low seat of such a height that when the feet rest on the floor, its front edge does not press unduly on the posterior surfaces of the thighs. The seat should have a backward slope downwards of ten degrees with the horizontal. The back should be high enough to reach to the sitter's occiput, and should be set at an angle of at least 95 degrees with the seat, and thus at one of 105 degrees with the horizontal. In such a chair the whole of the back is supported and the slope is great enough to check any tendency of the spine to sag, especially if a small thin cushion is fixed to correspond to the lumbar region. For writing or for reading books which are too heavy to be held long in the hands, a sloping desk is desirable, which should be of such a height that its front edge should be at the level of the middle of the patient's sternum when he or she sits upright. A sloping seat is of no advantage for use at a desk, but rather the contrary, and as the back of the chair does not come into use in desk-writing any chair with a level seat of a height as above described will be suitable.

Exercises and Massage.

To describe in any detail the exercises by which it is hoped to correct postural defects is beyond the scope of a short article such as this. They may be learned from a manual of physiotherapeutics, such as "Exercise in Education and Medicine," by Dr. R. Tait Mackenzie,[2] and are to be carried out by those trained in that branch. Suffice it to state that massage of relaxed and overstrained and undertoned muscles is of value, in addition to volitional exercises selected to enable the patient to attain and to maintain a normal healthy posture. In every scheme of corrective training the importance of the abdominal muscles must be borne constantly in mind.

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[2] W. B. Saunders Company, London and Philadelphia, 1923.

Special Articles.

ALASTRIM AND VARIOLA.

THE EXPERIMENTAL SIDE OF THE QUESTION.

BY J. C. G. LEDINGHAM, C.M.G., D.SC., M.B. ABERD., F.R.C.P. LOND., F.R.S.,
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RECENT suggestions to notify as para-smallpox (or some such designation) the mild form of variola now current in this country have been criticised on the ground that, apart from the lack of "toxicity" and death-dealing power which constitute the chief features of the mild form, its clinical manifestations are indistinguishable from those of the old-fashioned variola. The further point has been raised that until clinical or bacteriological differences are formulated and proved, notification under a special term has nothing to recommend it. Prof. R. Jorge's [1] very able and critical survey of the whole question of alastrim *et hoc genus omne* deals perhaps rather summarily with the experimental and immunological side of the subject, his opinion being that while alastrim satisfies, in the main, the principles of Jennerian vaccination as evidenced by the protection of the vaccinated and the reciprocal immunity of the convalescents to vacciaia, it is not entirely justifiable to use vaccinia as a sort of experimental touchstone or substitute for variola. He does not appear, however, to be a dualist in the old sense. He would wish to be assured in the first place that alastrim virus can, like variola, be reduced to the condition of variola vaccine by passage through the calf, but, even if this proved to be possible, he would still hold that clinical and epidemiological features constituted a real difference. The results of the animal experiments quoted by Prof. Jorge seem to him confused and conflicting and consequently of little evidential value, but, on the other hand, it is clear that he has not adequately surveyed and appreciated the available data relating to this aspect of the subject. I propose, therefore, by invitation of the Editor of this journal, to detail somewhat more fully than Prof. Jorge has done the results of animal experiments which to my mind clearly establish the essential identity of alastrim and variola so far as that is possible in default of the fuller and more precise immunological data which only the artificial culture of these viruses will provide.

[1] THE LANCET, 1924, ii., 1317, 1366.

The use of vaccinia as a touchstone in human and animal experiments has long been regarded as entirely valid in view of the now numerous demonstrations of successful variolisation of the calf whether by direct passage, oft repeated, or more frequently through the intermediary of the monkey. Moreover, the initial source of the current vaccine lymphs of commerce, though often wrapt in obscurity, is almost certainly in all cases human variola.

Experiments on Man.

These concern the results of vaccination of recovered cases of alastrim, it being generally admitted by most of those who have recorded their experiences in various countries that as a preventive of alastrim recent successful vaccination is notoriously effective. I ignore for the moment certain experiences which seem to show that when alastrim does attack the recently vaccinated, its manifestations may be fully as florid as in the unvaccinated. Such happenings, in my opinion, simply serve to illustrate flaws in the immunising mechanism which declare themselves in all experimental work and which are most likely the immediate consequence of an insufficiently developed complement of viricidal body to meet a fresh virus attack. In this connexion also it should be borne in mind that the path of vaccination with its limited local range is not the path by which in all probability the full-blooded virus enters the system.

With regard to the reciprocal experiments, the following data may be adduced: Dickson and Lassale (1903), who investigated the "varioloid varicella" of Trinidad, record that of 185 recovered cases 15 were successfully vaccinated, while de Korté (1904), in connexion with the South African amaas, reports that 14 cases vaccinated after recovery reacted "in varying degrees like individuals more or less protected by previous vaccination." Data concerned with the Brazilian alastrim are reported by Ribas (1910) and Rudolph (1911). The former found that the vaccination of 15 alastrim cases at periods of six months or later after recovery yielded positive takes in seven, while the latter vaccinated 20 recovered cases within one to six months with negative results in all. In a series vaccinated somewhat later, however, at 8–11 months, 3 out of 11 gave positive takes. Both Brazilian authors, impressed by these results, inferred that the immunity to vaccinia as conferred by alastrim was of relatively short duration. Robertson (1913), reviewing the outbreak of mild small-pox in New South Wales, states that the performance of vaccination on 675 recovered cases at varying periods after the appearance of the small-pox eruption yielded a positive take in one case

only which was vaccinated on the second day of the small-pox eruption. It would seem unnecessary to pursue further the consideration of this line of experiment and simply to multiply instances of general conformity with small-pox with occasional lapses from the rule.

Experiments on Animals.

If alastrim, and here I use it simply as a convenient term, is to be regarded as essentially identical with small-pox, one would expect it to show certain constant and distinguishing features which the latter disease has always exhibited when attempts are made to transmit it directly to animals by cutaneous inoculation. The rule is that monkeys are readily infected with material from the human lesion at the first trial, while calves and rabbits fail to react under the same circumstances. Adaptation to the calf is generally secured by repeated passage, starting with potent material from the monkey or occasionally from the rabbit. By a passage is here meant the cutaneous inoculation of scurfy material and cutaneous debris scraped from the abortive site on another calf, the final result being a crop of definite and typical vesicles indicating complete adaptation. There is a considerable element of luck in securing variolisation of the calf and the necessary passages may sometimes be quite few, but it is evident that before adaptation can be established the virulence of variola for the calf requires to be steadily raised. Once adaptation is secured, however, repeated passage tends, as is well known, to a weakening of the virus, and other methods have to be employed, such as retrovaccination, to restore its activity for commercial purposes. This subject is the peculiar province of the lymph specialist and need not be discussed here.

Monkeys.

The records of experimental work with monkeys to receive notice here will be those of Green, Leake and Force, and Blaxall, representing respectively Australian alastrim, West Indian alastrim, and English mild small-pox. Green (1915), in the course of his investigation at the Lister Institute, London, of material forwarded from the New South Wales outbreak of 1913, inoculated eight monkeys, all of which reacted at the first trial with production of vesicles "resembling vaccine vesicles so closely that it was impossible to distinguish one condition from another." Leake and Force (1921), of the United States Public Health Service, examined at Washington material transmitted from West Indian foci (Jamaica and Haiti). They inoculated two monkeys with crusts from Haitian alastrim and pustule contents from Jamaican alastrim with the result that the shaved areas of skin into which the materials were rubbed presented in the course of some days a vesico-papular eruption" similar to that produced in three monkeys which had been inoculated some months previously with pustule contents from a case of small-pox in the district of Columbia.

Blaxall (1923), of the Government Lymph Institute, Hendon, communicated to a Paris conference in connexion with the commemoration of the death of Jenner a very important and extensive series of observations, not so far published in English, on the small-pox prevailing in England in 1922. The material he examined came from suspected cases of the mild small-pox occurring in the north (three deaths in 821 cases) and also from the small outbreak of virulent small-pox which occurred in London and vicinity in the autumn of the same year (24 deaths in 74 cases). Samples from 12 cases of the mild type were inoculated in duplicate on monkeys. By the fourth day were observed papules which by the sixth, seventh, or eighth day had become definite and typical vesicles. Control experiments with material from suspected varicella produced no lesion. With the material from the London outbreak a vesicular eruption similar to that from the mild small-pox material presented itself on the seventh day and was harvested on the eighth day.

Calves.

Cleland and Ferguson (1915) in connexion with their investigation of material from the New South Wales outbreak of 1913, made experiments on six calves. Apparently they got some slight form of take at the first transference of human material to the calf, but it appears from the actual description that little more than a zone of redness round one of the scarified areas resulted. Scraped material from this calf yielded no result on a fresh calf. At the third and fourth removes, however, definite evidence of vesiculation was obtained and in all later removes the reactions were "indistinguishable from those of vaccinia." Green (loc. cit.), with the imported material from Australia, had a somewhat different experience with the eight calves on which the tests were made. Three calves, A, B, and C, inoculated with human material, showed at 120 hours along the lines of inoculation a series of yellow vesicles which in appearance did not resemble ordinary vaccine vesicles, being smaller and more discrete. They represented, on the other hand, too advanced a reaction to expect as a first result of inoculation of variola on the calf. Calves D and E inoculated in one spot with material from A failed to show any take, while inoculation on another spot with material from B gave suggestive "but not convincing poor-class vaccine vesicles." Calves F and G inoculated with material recovered from a monkey which reacted yielded "moderately fair quality vaccine vesicles." Green concluded that the Australian disease differed from vaccinia in its lesser ability to produce typical vaccinal vesiculation, though it approximated more closely after passage through the monkey. On the other hand, it differed from variola by the fact of its greater facility for vesiculating on the calf. In Blaxall's (loc. cit.) experience with English mild small-pox, calves completely failed to react at the first trial. So also did calves inoculated with material from the severe London outbreak. Starting with monkey material, however, he succeeded in variolising the calf by persistent passage from calf to calf of material from apparently abortive sites. At the third remove the originally abortive reaction had changed to a typical Jennerian vesicular eruption. Precisely similar variolisation was achieved with material from the London cases.

Rabbits and Guinea-Pigs.

Green failed to obtain any result by direct transference of material to 70 male guinea-pigs inoculated on the scrotum while 70 controls inoculated with vaccinia reacted typically. Leake and Force with West Indian alastrim obtained either negative or abortive reactions in two rabbits. They were, however, later found to be almost completely immune to vaccinia. Blaxall's extensive series of rabbits inoculated with English mild small-pox showed no vesiculation but only what might be termed a mild degree of papulation. With scurfy material scraped from these rabbits, especially when bleeding points were noted underneath the scabs, he succeeded in securing typical vesiculation at the third calf remove. In the course of this passage work he became impressed with the fact that only when bleeding points were observed under scabs in otherwise completely abortive sites was the material removed generally calculated to yield enhanced reactions at further removes.

Cross-Immunity Experiments.

These experiments have usually been concerned with the vaccination of animals at some time after recovery from a successful inoculation with alastrim material. Naturally, many factors have to be borne in mind in appraising such experiments, notably the time at which the subsequent vaccination is performed, the degree of the primary or immunising reaction, the potency of the vaccine lymph employed and probably many others. Variations in one or more of these categories may account for discrepancies in the observations of different workers. I enter here in tabular form Green's cross-immunity experiments

with Australian alastrim. They were performed on monkeys which were divided up into three lots, one receiving a primary inoculation of alastrim, a second of vaccinia, and a third of ordinary variola. The lots (containing, unfortunately, small numbers in each) were then tested subsequently with the reciprocal materials.

The dates of the test inoculation ranged from six to 18 days after the full development of the primary rash, which varied in intensity in the different animals.

Primary inoc.	No of animals.	Subsequent test.		
		Vaccinia.	Variola.	Alastrim.
Australian alastrim ..	8	7 (all +)	5 (4 +1 −)	
Vaccinia ..	4	1 (−)	3 (all −)	3 (2 +1 −)
Variola.. ..	5	5 (2 +3 −)		5 (3 +2 −)

The table shows that the Australian disease conferred practically no immunity to vaccinia or variola, that vaccinia protected against Australian disease in 25 per cent. of the cases, and that variola gave immunity to Australian disease in 40 per cent. of the cases. Also, while vaccinia protected against variola in 100 per cent. of trials, variola protected against vaccinia in 40 per cent. only. Cleland and Ferguson, who employed calves, came to the conclusion, which is not quite warranted from the actual experiments, that Australian disease and vaccinia are mutually more or less completely protective against each other, but they add the proviso "provided sufficient area is inoculated."

Blaxall's cross-immunity experiments with monkeys showed unequivocally that English mild small-pox gave protection to vaccinia. The interval between primary inoculation and immunity test with vaccinia was generally one week. With calves, as the variolisation process went on, subsequent vaccination led to less and less reaction, and the calves which showed at the third remove typical vesiculation from mild small-pox were found to be completely immune to vaccinia. Converse experiments were also carried out by Blaxall, calves and rabbits being inoculated with vaccinia and subsequently tested with mild small-pox material. Vaccinia gave complete protection. Allergic tests were also made by Blaxall on rabbits, about a week after scarification with vaccinia. Intracutaneous inoculation at that period of mild small-pox material, whether boiled or unboiled, yielded typical allergic reactions. Varicellar material failed.

Summary.

(1) Mild small-pox behaves like ordinary small-pox when transferred directly to the monkey. (2) Direct transference to calves and rabbits is uncertain and is most likely to fail, though the chances of securing some sort of atypical take at the first attempt would appear to be greater than in the case of variola. There may doubtless be slight differences between the various alastrims with respect to their animal affinities. (3) Variolisation of the calf can be accomplished by the usual passage methods. (4) Allowing for certain peculiarities which distinguish the experiments with Australian alastrim, there would seem to be no doubt that the mild small-pox of English origin behaves in all important respects like ordinary variola.

Conclusion.

The persistently non-toxic and non-lethal character of the prevailing small-pox is consistent with the view that the virus concerned is merely a variant of variola whose toxic properties for the human organism have become suppressed, while its affinities for other animal species have not appreciably changed. The intrinsic and epidemiological peculiarities of mild small-pox suggest tempting analogies with certain features exhibited by non-toxic or non-virulent varieties of bacteria generally, which recent research on bacterial variation has disclosed.

(Continued at foot of next column.)

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A VISIT TO CULION LEPER COLONY, PHILIPPINE ISLANDS.

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II.

IN a previous article (THE LANCET, Jan. 17th) I described the general features of the Colony and discussed the difficult question of the segregation of lepers. I now deal with the treatment as practised at Culion Island under three headings: chemical, pathological, and actual.

(1) *The Chemical Section.*—The chemical section at Culion is a development from the clinical work on leprosy which has been carried on for many years at the Bureau of Science, Manila, and is in charge of a chief chemist, G. A. Perkins, working with two junior chemists and four laboratory assistants. The chemical work includes the factory where the ethyl esters of chaulmoogra and other preparations for the treatment of leprosy are made, and the chemical laboratory and office. The chemical laboratory and office occupies a room in the same building as the other laboratories. Here the more refined tests in connexion with the manufacture of drugs are carried out and special research work carried on.[5 6]

The work in the chemical laboratory at present is based on the idea that the chaulmoogra group of oils are supposed to have two actions on leprosy. (1) A non-specific action, which is also produced by oils not belonging to the chaulmoogra group, such as olive oil, soya bean oil, &c.; and (2) a specific action, which is indicated by the special bactericidal action which chaulmoogra oil has on the acid-fast group of bacilli.

In connexion with the non-specific effect the chemical laboratory is coöperating with the chemical and pathological section in the use of various oils and in chemical blood analysis. With regard to the specific effect, an attempt is being made to produce substances having an increased specific action by preparing modification of chaulmoogra and hydnocarpic acid.

(2) *The Pathological Section.*—The present staff consists of three medical men, one confining himself chiefly to routine bacteriological work, a technical assistant trained in clinical microscopy, and a pathological technician, a clerk and laboratory helpers. The chief pathologist had, until early in 1924, served as acting chief physician, and had taken very little part in the actual work of the section. The present laboratory was made available early in 1923. It has working space for four workers, in addition to the

[5] G. A. Perkins and A. O. Cruz: A Comparative Analytical Study of Various Oils in the Chaulmoogra Group, Phil. Jour. Sc., December, 1923.
[6] G. A. Perkins: Chaulmoogra Ethyl, Propyl, Butyl, and Amyl Esters—Therapeutic Effects, Phil. Jour. Sc., 1924.

(Continued from previous column.)

technical staff. It is fairly well equipped for routine and research in pathology, bacteriology, immunology, and ordinary clinical microscopy.

Pathology.—There being more than 500 deaths per year, the great majority of which could be autopsied, it is necessary to select cases. This is done primarily for diagnosis, the clinical staff requesting autopsy on all cases in which the condition is unusual or the cause of death in doubt. The pathological staff also autopsies, on its own initiative, other cases of special interest to itself. From April 1st, 1922, to June 1st, 1924, practically 400 post-mortems have been made, the great majority by one man. The rate will be increased somewhat in the future, as two men are now available for this work. Of actual pathological research little has been done as yet, except study of the localisation of *B. leprœ* in the organs.

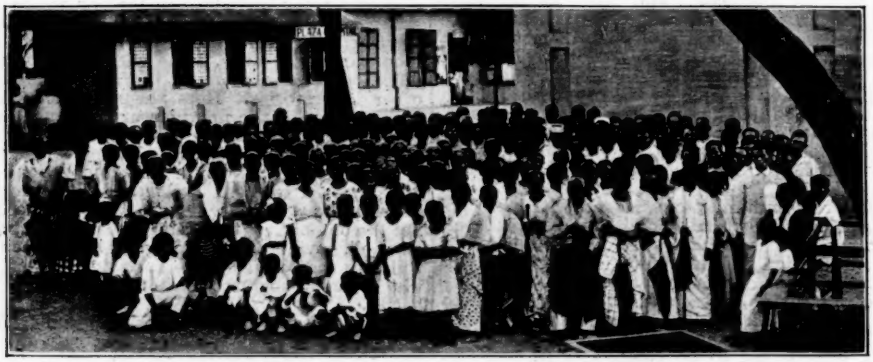
Bacteriology.—The bulk of bacteriological work consists of routine smears for *B. leprœ* in connexion with the admission of new cases, and particularly cases that are becoming or have become "negative" under treatment. The latter requires particular attention, to avoid error both in their original inclusion in the "negative list" and their continuance therein; the clinical staff re-examines them periodically.

(3) *The Actual Treatment as Carried on in the Clinics and Hospital Wards.*—In the earlier years little could be done with regard to the treatment of lepers at Culion, other than palliative work directed by a very insufficient staff. Chaulmoogra oil by the mouth being very slow in action and too irritating to the stomach, efforts were made to use it by injection. The first advance was the so-called Heiser-Mercado formula; the Jeanselme formula (1 part chaulmoogra and 1 part of a mixture of guaiacol, ℿ59; camphor, ℿ259; and oil of vaseline, ℿ59) was also used, but much less. At first the Mercado mixture was found very irritating, but now, as prepared with refined oil, is much less so. Next, in 1920, Dr. Perkins[7] prepared the sodium salts of chaulmoogra and cod-liver oils, and these were used on a small scale. A dilute "colloidal" emulsion similar to the collobasis of chaulmoogra oil of danise was also tried.

Five hundred favourable cases were now selected, and on July 1st, 1921, treatments were begun. The cases were divided into four groups: (1) sodium gynocardate A intravenously, 50 patients; (2) sodium morrhuate intravenously, 50 patients; (3) Mercado mixture intramuscularly, 100 patients; and (4) chaulmoogra ethyl esters intramuscularly, 300 patients.

All treatments except the Mercado were given twice a week. Soon it became necessary to discontinue the intravenous treatments because of obliteration of veins. Such cases were transferred to the ethyl ester groups. Before the end of the year the ethyl esters became the accepted general treatment. The number of cases was increased to over 1000 by the end of the year, and to over 1600 in April, 1922, when the work was expanded to its present scale.

The total medical staff, not including the chief of the colony, is now 17 physicians; 11 of these, with an equal number of nurses, are organised into two clinic groups, which administer practically all the anti-leprosy treatments to the 4000 and more patients on the treatment lists. One of the physicians in each clinic is appointed a supervisor. Each of the nine unit physicians attends to the medical care of the 400 to 500 patients on his list who become sick and require to be sent into hospital. The General Hospital, in charge of three other physicians, contains 250 beds, and here are treated the actually sick members of the, roughly, 1000 inmates who are too advanced in leprosy, tuberculosis, or nephritis to receive active anti-leprosy treatment.



Group of 225 negative lepers waiting the completion of six months' "negative period" before their release.

Treatments Used.

The chaulmoogra ethyl ester is the principal medicament used since late 1921. This is given intramuscularly, and in all but a comparatively small group but once a week. The iodised preparation with 0·5 per cent. iodine has proved somewhat less irritating than the plain drug, and it is now being given to a majority of the cases.

Cod-liver-oil esters have been used in a few cases. They have proved not inefficient, but are less useful than the corresponding chaulmoogra product.

Mercado mixture has been given to a small number of patients to whom the ethyl esters were particularly irritating, and to a few who refused to take any other treatment. A few small groups have been put on ethyl, propyl, butyl, and amyl esters of chaulmoogra, and on ethyl esters of certain other oils.

Antimony.[8]—Tartar emetic injections and Castellani's formula by mouth have been tried for a short period but with injurious results.

Various creosoted preparations were also used, and now creosoted ethyl esters are being used for extensive test.

Adjuvant Medication.—Very little adjuvant medication as a part of the regular treatment has been given until recently. A consequence of this is that the main results that have been obtained are ascribable to the injections alone.

Cases under Treatment.—The data from the cases under treatment are from the last (second) semi-annual reports rendered by the treatment physicians, dated March 21st, 1923. These reports, it may be

[7] Reports of Philippine Health Service for 1920, p. 41, and for 1921, p. 128.

[8] Rodriguez and Enbanas: The Treatment of Leprosy with Antimony, Phil. Jour. Sc., col. 28, No. 6, December, 1923.

remarked, involve much work, and it requires two or three months to obtain the data and reduce them to a usable form. In 1922, in dealing with the figures supplied by the physicians in charge of the nine different units, it was found that the results varied very much in the different units. This was found to be due not only to the personal equation of each physician but also to the differences in classifying the types of case and in recording the degree of involvement of the tissues by the disease, and the degree of advancement of the disease where evident.[9 10]

The necessity of taking active measures to secure more uniform reporting by individual physicians having been made clear, detailed instructions were prepared and distributed, using certain tentative classifications, it being understood that they were subject to revision later on.

Number under Treatment.—During the period referred to there were in round numbers 4200 patients under treatment. Since then 700 have had to be dropped from the treatment lists on account of nephritis, tuberculosis, &c., while some 300 new cases have been taken on. Patients not on the treatment clinic lists report to a dispensary clinic from time to time, and when necessary are hospitalised in the General Hospital, which is separate from the wards for "treatment" patients.

Sex.—Of 3975 cases tabulated 65·1 per cent. are males and 34·9 per cent. females, a curious proportion that has been repeatedly observed in leprosaria.

Age.—Practically 70 per cent. of the 3975 cases are at the present time between 15 and 46 years of age. The smallest group, 35 to 40, is 9·8 per cent. of the whole; the largest, 20 to 25 years, is 17·7 per cent.

Duration of the Disease.—Of 3852 cases tabulated in this connexion only 15 claimed to have had the disease less than a year at the time of the report. The largest group claimed 5 to 7 years' duration. Roughly the average duration was between 8 and 8·5 years.

Types of Cases.—Of 3888 cases, practically 22 per cent. are recorded as of the cutaneous type, 69 per cent. as mixed, and 9 per cent. neural. This great predominance of the mixed type is due in part to the average long duration of the disease, and in part to the very careful search made for evidences of disturbed nerve function.

Relation of Type of Case to Duration.—It may be noted that there is a much higher percentage of pure cutaneous cases among those of short duration than among the chronic cases. On the other hand, pure neurals are much more common among those of longest duration. There is evidenced a distinct tendency to shift from pure cutaneous to mixed, and finally, among those surviving, for the cutaneous manifestations to disappear.

Results of Treatment.

Space will only allow of a brief presentation of the gross results and the factors that apparently affect them.

Gross Results.—Of the total of 4035 cases of all kinds and degrees of advancement, under all varieties of anti-leprosy treatment included in the last semi-annual reports, the present status as compared with the original condition is: Improved, 53·3 per cent.; stationary, 36 per cent. (totalling 89·3 per cent.); worse or dead, 10·7 per cent. Taking the improved as a separate group, 7·5 per cent. are reported as markedly improved, 20·9 per cent. moderately improved, and 71·7 per cent. but slightly improved.

These gross results must be considered with an appreciation of the influence of certain modifying factors. These are of two types—those independent of the material used, and those that are to a greater or less extent influenced by the medicament. The former includes sex, age, duration of the disease, type of case, and time under treatment. Also, of course, the personal equation of the physician, but in so large a group these tend to neutralise each other.

Sex.—Males have improved to a slightly less extent than females—52 per cent., as compared with 55 per cent.

Age.—When the percentage of improved in each five-year group is laid down in a graph for the two sexes separately, the resulting lines show certain fluctuations and in places wide differences, probably corresponding with periods of greatest sexual activity and the menopause.

The statistics would seem to bear out the opinion of the individual treating physicians that marriage is harmful for lepers.

Duration of the Disease.—This has a very decided influence. Of the group (261 cases) claiming two to three years' duration, 68 per cent. have improved; whereas those of 15 to 20 years' duration (266 cases), but 43 per cent. have improved. In keeping with this there are relatively fewer marked improved in the older groups.

Type of Case.—This factor, as has been said, is to a considerable extent dependent on duration, the cutaneous respond best. Of the cases of the cutaneous type, 62 per cent. have improved, of the mixed 49 per cent., of the neural but 39 per cent. The neurals, by the way, have also the lowest worse figure. The percentage of stationary cases varies in reverse order, the neurals having the largest.

Time under Treatment.—This is naturally an important factor. But 35 per cent. have been a full year with 75 per cent. improved. For those treated less time the figures are much lower.

The factors that are influenced by the medications themselves are the number of injections given during a given period, the total amount of drug administered, and the reactions that occur during treatment. A bland medicament can be given more frequently, more regularly, and in larger doses.

The Number of Injections that a patient is given and the dosage are limited by the individual reaction to injections (and these vary widely), the development of complications of whatever degree of importance, and his own desire or lack of it to receive treatment.

Total Amount Given.—As for the total amount given, one-half of all the cases received 30 c.cm. or less during the six months, whereas the minimal desired dose for average active cases for the period was 60 c.cm. Less than 10 per cent. (8·7 per cent.) received more than this amount. Correlating improvement with dosage of those that received 30 c.cm. or less but 37 per cent. were reported improved, whereas of those (33 per cent. of the whole) that received more than 40 c.cm. 73 per cent. improved. Similarly the degree of improvement increased rapidly with the increase of amount of the drug taken.

Comparison of Preparations.—On comparing the effect of the plain and iodised preparations the only real difference that has been seen is that the iodised being somewhat less irritating, relatively more patients took larger total amounts, resulting in somewhat better improvement figures. Dose for dose there is no apparent difference.

Complications.[11]

Pulmonary tuberculosis and nephritis are the most frequent causes of death in Culion, and offer serious problems in connexion with treatment work. (Table I.)

TABLE I.—*Chief Causes of Death in Treated (T.) and Untreated (UT.) Groups of Patients, 1922–23.*

Group.	Total number of deaths.	Tuberculosis.	Nephritis.	Heart disease.	Pneumonia.	Gangrene septic infections.	Dysentry and enteritis.	Leprosy.	Cerebral hemorrhage.	Malaria.	Other diseases.
T.	282	91 (32·2 %)	74 (26·2 %)	28 (9·9 %)	19 (6·7 %)	9 (3·1 %)	9 (3·1 %)	7 (2·4 %)	6 (2·1 %)	6 (2·1 %)	32 (11·3 %)
UT.	415	309 (74·4 %)	41 (9·8 %)	26 (6·2 %)	9 (2·1 %)	4 (0·9 %)	2 (0·4 %)	11 (2·6 %)	7 (1·6 %)	1 (0·2 %)	5 (1·2 %)

[9] Report to the Director of Health on the Reorganisation and Activities of the Medical Section, Culion Leper Colony, and of the Results obtained from the Treatment Work, 1922. By H. W. Wade, M.D.

[10] Leprosy Work in the Philippines. By H. W. Wade, M.D. Trans. of the Fifth Conf. of the Far East Assoc., 1923. Now in the press.

[11] An article by Dr. C. B. Lasa, Chief Physician, and Drs. B. de Vera, J. G. Samson, and F. C. Eubanas, of the Medical Section, Culion Leper Colony, "On the Chief Causes of Death Among Lepers at the Culion Leper Colony," will shortly be published.

Tuberculosis.—Death from all forms of tuberculosis in Manila in 1921 constituted 19·9 per cent. of the total deaths. In 1921 the Culion rate was 32·0 per cent., distinctly higher than the corresponding Manila figure. In 1922 there was a sudden increase to 51 per cent., and in 1923 to 46 per cent. of the total deaths. This is ascribed to the irritating effect of ethyl ester treatment lighting up latent tuberculosis.

Nephritis.—Nephritis shows a much higher percentage in the treated than in the untreated. Directly or indirectly—probably both—the general and systematic application of the ethyl ester treatment gives rise to an intensification of the mild processes in the kidneys which are admitted by many authorities to be quite common in leprosy, and which we believe are frequently not sufficient in themselves directly to lead to a fatal outcome.

TABLE II.—*Analysis of Reports of Treatment, March to September, 1923.*

Drug.	Number.	Improved.	Stationary	Worse.
		%	%	%
Chaul., E.E.Pl. ..	927	57	28	14
,, E.E.I. ..	2325	66	22	12
Mercado	249	45	33	22
Morrhuæ, E.E. ..	60	73	13	3
E.E., creas. group ..	26	62	35	4
Chaul., butyl, I.E.	33	(6)	(20)	(7)
E.E., camphorated	10	(2)	(6)	(2)
Amyl esters	10	(2)	(6)	(2)
Propyl esters ..	9	(1)	(5)	(3)
E.E., Wightiana ..	48	(16)	(29)	(3)

Figures enclosed with parentheses indicate number only, not percentage.

TABLE IIA.—*Negatives.*

Up to Jan. 1st, 1924		235
Died	9	39
Paroled during 1923	30	
Remaining		196
Negative since January	34	
Paroled	10	24
Total now in the Colony (March)		220
Probable negatives pending Committee's decision ..		63
Total		283

A table is also appended (Table II.) of the analysis of reports of treatment from March to September, 1923, but no detailed comments similar to those for the previous half-year are given.

Conclusions.

It is frequently asked whether one preparation is appreciably better than another. It is too soon to make any definite statements; probably at least another two years must elapse before it will be safe to make a dogmatic statement as to the value of the ethyl ester treatment with its various modifications. It is probably not even safe to say at present that the ethyl ester injections are of appreciably greater value than the intramuscular injection of refined chaulmoogra oil itself, but the figures are distinctly encouraging.

Both the impressions of the staff and patients and the statistical data indicate that the treatment is, on the whole, productive of much benefit, and is distinctly promising in those cases that are not too advanced or too badly affected by complications for marked or permanent relief to be expected. Among those whose treatment has been of less than one year's duration a comparatively low percentage are reported as improved, while of those of the one- or two-year group a high improvement rate of about 70 per cent. is shown. The amount of the drug given is also of great importance. Probably any treatment which is not likely to be continued regularly for at least two years is waste of time and money. Some patients show hardly any improvement for nearly a year, and then begin to make progress. This has to be taken into account in dealing with any uneducated and comparatively ignorant population who are undergoing *voluntary treatment* and who are likely to become impatient and give up treatment because the improvement hoped for is delayed. On the other hand, treatment is likely to be abandoned because they consider that the improvement is so great that they are sufficiently cured. The publication of results drawn from the statistics of small numbers of patients (200 or 300, say), treated for short periods of less than a year, is strongly to be deprecated as likely to lead to false deductions and future disappointment.

Finally, it cannot be said that "a new cure" has been discovered for leprosy, but a good deal of research is being carried on, and it is hoped that one day a cure will be discovered (possibly on quite different lines) that can be described with truth as a specific for this disease.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Vital Statistics of the Irish Free State.

SPEAKING at a recent meeting of the Section of State Medicine of the Royal Academy of Medicine in Ireland, Sir William Thompson dealt with a few outstanding points in connexion with the vital statistics of the Irish Free State. He said that nearly 72 per cent. of the population of Ireland, according to the census of 1911, covering about 84 per cent. of its area, came under the jurisdiction of the Government of Saorstat Eireann as the result of the Treaty. The population of Saorstat Eireann, which was 6,547,652 in 1841, fell to 3,139,688 in 1911, that of Northern Ireland falling from 1,648,945 to 1,250,531. According to the census of 1911, about 27 per cent. of the population of Saorstat Eireann area was urban, while the urban population of Northern Ireland constituted about 47 per cent. of its total population. The marriage-rates in Saorstat Eireann for the various periods from 1871 to 1914 showed a decided tendency upwards, increasing from 4·38 per 1000 of the population in 1871–80 to 5·02 per 1000 in 1911–14, but rising to 5·06 in 1919–22. As might be expected, the crude birth-rate was low (19·49 per 1000 in 1923) as compared with England and Wales and Scotland, but a wide disparity existed in regard to the fertility-rate; in Saorstat Eireann the number of legitimate births per 1000 married women, aged 15–45 years, was 305, as compared with 197 for England and Wales. The death-rate from all causes, which was 17·64 per 1000 as the annual average for the years 1891–1900, fell to 13·34 per 1000 in 1923, the latter being the lowest rate recorded. The mortality from tuberculosis was 2·53 per 1000 of the population for the ten years 1901–10. The rate for 1923—i.e., 1·41 per 1000—showed a reduction of 1·12 per 1000, or 44 per cent. The rate represented by deaths from cancer rose from 0·37 per 1000 for the period 1881–90 to 0·81 per 1000 for 1911–14, since which period the mortality from cancer had remained practically stationary. The mortality from diabetes in Saorstat Eireann during the five years 1919–23 was 0·7 per 10,000 of the population as compared with 1·1 for Northern Ireland and England and Wales. Infant mortality, which was 99 per 1000 births during the decennium 1891–1900, was only 66 in 1923, the lowest rate recorded, the rates for Northern Ireland, England and Wales, and Scotland during the latter year being 77, 69, and 79 respectively. The infant mortality relating to urban areas in Saorstat Eireann was 99 per 1000 births in 1923, which is nearly double the rate (50) for rural districts.

Although the mortality among the infants whose births were legitimate was low (59 per 1000), that among the births of illegitimate infants must be considered excessive for the year 1923—viz., 344 per 1000 illegitimate births. In regard to this high rate, he pointed out, it should be borne in mind that in the absence of information relating to preceding years, and in view of the smallness of the numbers from which it was derived, it was possible that the period under review (1923) might not be a typical year.

Medical Referees to the National Health Insurance Commission.

It was stated in this column a fortnight ago that appointments of medical referees to the National Health Insurance Commission were to be made on the advice of a Selection Board set up by the Civil Service Commission. This is being done, but the Selection Board is so in name only, for it consists of three permanent medical officials of the civil service. The promise was made many years ago by the National Health Insurance Commission that when referees were to be appointed, the representatives of the profession would be consulted as to the suitability of the candidates. It was recognised that if the referees were to perform their duties effectively, they must be persons of such character and experience as to command the respect and confidence of the profession. Recently, when sanction was given to the appointment of referees, the medical members of the Advisory Committee to the National Health Insurance Commission were assured that the Irish Medical Committee would be invited to nominate one or more members of the Selection Board. Subsequently, this decision was reversed and a purely official board was appointed. This action, it is feared, will prejudice the efficiency of the referee system.

An Unintended Slight.

In the paragraph dealing with the terms of appointment of the referees in THE LANCET of Jan. 10th (p. 95), by unfortunate wording a slight appeared to be cast on the importance of the duties of the medical inspectors of the Department of Local Government and Public Health. It was intended to say that the duties of the latter were not "more exacting" than those of the medical referees whose salary was under discussion. Unfortunately, the word "more" was omitted, and the sentence stated that the duties were not "exacting." The work of a Local Government inspector is, of course, not only exacting, but important and responsible in a high degree.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. MacDonald is placed on the ret. list, with the rank of Surg. Capt.

W. A. Hopkins to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. M. G. Winder to be Lt.-Col., vice Lt.-Col. W. M. B. Sparkes to ret. pay.

Capt. T. F. Kennedy relinquishes the temp. rank of Maj., on ceasing to be empld. as a Dep. Asst. Dir. of Hygiene.

Capt. W. H. Ferguson relinquishes the temp. rank of Maj., on ceasing to be empld. as a Dep. Asst. Dir. of Pathology.

Capt. H. G. Hobson is restd. to the estabt.

Lt. (on prob.) F. H. King resigns his commn.

ARMY RESERVE OF OFFICERS.

Surg. Lt.-Col. J. H. Power (Life Guards), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Army Dental Corps.—Lt. J. S. Lycett, late 71st (W. Riding) Fd. Bde., R.A., T.A., to be Lt.

TERRITORIAL ARMY.

Maj. W. P. G. Williams (I.M.S. retired) to be Major.

Maj. (Prov.) H. L. Garson is confirmed in his rank.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. P. J. Watkin, from Active List, to be Capt.

INDIAN MEDICAL SERVICE.

Maj. W. D. H. Stevenson relinquishes the temp. rank of Lt.-Col. on vacating the appt. of Assist. Director-General.

TESTIMONIAL TO PROF. RUTHERFORD MORISON.—The first subscription list to this testimonial appeared in THE LANCET of Jan. 17th. Further subscriptions may be sent to the hon. secretary and treasurer, Mr. R. J. Willan, F.R.C.S., 6, Kensington-terrace, Newcastle-on-Tyne.

Correspondence.

"Audi alteram partem."

ALASTRIM, PARA-SMALLPOX, AND VARIOLA.

To the Editor of THE LANCET.

SIR,—My interest in Prof. Jorge's masterly paper has equalled that of your correspondents, but I fear that too great attention is being devoted to the mere question of terminology, whereas the essential question is "What practical steps are necessary to deal with the small-pox of to-day, call it what you will?" I do not agree with the dictum that attempts to treat outbreaks of the present non-virulent strain of small-pox just as if it were a virulent strain tend to bring administrative action into contempt and disrepute. This is only true if the opportunity is missed, through mischance or defective administrative machinery, of dealing promptly and efficiently with the *initial cases*. My warrant for making this ex-cathedra statement springs from an experience of 38 years in a city and port now containing over 385,000 persons, and during this time I have had to deal with 85 introductions of small-pox, ranging in fatality from 2·9 per cent. upwards.

In 1904 an extraordinarily mild type of small-pox, conforming to the Gloucester type (with which I am acquainted), was brought into Bristol on six occasions, got amongst some dockers' huts at Avonmouth, and threatened trouble. While we marvelled at the abnormal mildness, at the tendency to abort, at the absence of secondary fever, and so on, this was not allowed to interfere with our plain administrative duties of control at the outset, and the total of cases was limited to 34, with only one death of an unvaccinated infant. About the same time (1903-04), I note, Leicester experienced a similar mild outbreak, leading to 321 cases and four deaths. Nor was the mildness of our Avonmouth type to be trusted—one patient carried the disease to South Wales where 15 cases, 4 confluent, and one death resulted.

I deprecate the suggestion that text-books tend to over-emphasise the heavy fatality of small-pox; it is impossible to exaggerate the risk when the malignant type is in evidence, as I well know from many pitiful experiences. Malignant small-pox is not played out, witness the recent experience of Michigan,[1] and it is unwise to encourage a feeling of false security.

I am, Sir, yours faithfully,

D. S. DAVIES,
Medical Officer of Health, City and County and Port of Bristol.

Jan. 17th, 1925.

To the Editor of THE LANCET.

SIR,—I think Dr. R. P. Garrow has hit the nail on the head. The Gloucester epidemic was *de facto* not small-pox, but yet it was related to small-pox, and this relationship should certainly be brought out in whatever nomenclature we finally determine to adopt. Exotic neologisms like alastrim or amaas simply confuse the issue; let us call this mild distemper para-smallpox or para-variola, on the analogy of para-typhoid. Having then thus fixed the fact of relationship, we may begin to consider more seriously than we have yet done what relationship actually involves. Does it not, in fact, mean that there is or can be (varying with time, place, &c.) a certain *coming and going* between the members of these disease-groups—thus within the varioloid group, the influenza-encephalitis-myelitis group, &c.?

I am, Sir, yours faithfully,

Edinburgh, Jan. 14th, 1925. A. J. BROCK.

[1] The Medical Officer, Dec. 13th, 1924. Supplement, p. 7.

INFECTION SPREAD BY VAGRANTS.

To the Editor of THE LANCET.

SIR,—I am thankful to see from a paragraph in your issue of Jan. 10th that you desire the Ministry of Health to act promptly on the information given in the recent Official Survey of the provincial casual wards. A case before the Tavistock magistrates, reported in the *Western Morning News* of Jan. 6th, shows how tramps are treated in some wards notwithstanding the Official Survey has been made and published. A "casual" was prosecuted for damaging a lock in the Tavistock ward. The master said "that he made a complaint about not having his jacket fumigated. There were no grounds for complaint because they could not fumigate clothes on a Sunday." The prisoner used his jacket as a pillow because no pillows were provided.

Now, the regulations of 1882 (as stated in your paragraph) require that the casual's clothes should be taken from him, and, if necessary, dried or disinfected. And they make no exception for Sunday. Indeed, a garment is just as infectious on a Sunday as on a week-day. I take it as quite clear that the garment needed fumigation or the master would have told the justices that it was not necessary. No information is given in the report as to why fumigation was necessary, but I see in the *Poor Law Officers' Journal* of Jan. 16th that one of the Tavistock guardians said that "many of the men who tramped the country were covered with vermin." At all events there is no doubt that the regulations requiring disinfection are essential both for the safety of the public and of the inmates of the next ward to which the wayfarers come. And a man in verminous clothes is much hampered in his search for work.

I am blaming the guardians not the master; because it is the guardians who should have supplied the means of disinfection on Sundays and the pillows, and no doubt the master out of humanity allowed the man to sleep on his jacket. I believe in some cases the "paupers" are allowed to sleep with their boots for pillows. In some cases where there are hammocks they are so unsatisfactory that the men prefer to sleep on the floor using the hammocks as bedding.

I hope that some of the health authorities will move. I have just written on the subject to the councils of the counties mentioned in the Survey as having from one-sixth to one-third of their wards unheated, and to those where the cleanliness is said to be "poor" and some others. I shall be happy to send a copy to any other county council or any district council who would care to have it. As far as I can see from the Survey the Devonshire casual wards seemed to be among the worst; for out of the 15 wards in England and Wales where the cleanliness was said to be "poor," four belong to that county; and also it and Dorset are the only counties which had as many as one-third of their wards unheated. It is fair to Tavistock to say that their ward was heated.

I am, Sir, yours faithfully,

J. THEODORE DODD,
Barrister-at-Law and ex-Guardian.

55, St. Giles', Oxford, Jan. 17th, 1925.

INTRAVENOUS INJECTIONS IN NON-TUBERCULOUS MENINGITIS.

To the Editor of THE LANCET.

SIR,—I was impressed with the lucidity displayed by those who took part in the recent discussion on Non-tuberculous Meningitis at the Royal Society of Medicine (THE LANCET, Dec. 20th, 1924, p. 1281). It seemed to me that a fresh aspect of the case was indicated by Dr. D. Nabarro, who dwelt on the factor of a general septicæmia in a number of cases of meningitis. This recalled to my mind a paper I heard read in the recent French Congress of Oto-Laryngology in Paris by Dr. Maloens, of Brussels. His observations lead him to attach great value to the administration of an iodo-urotropin preparation. At first he used it by the intrathecal method, and in proof of its value narrated a case of typical otitic purulent meningitis in which recovery was brought about. More recently he had become convinced that intravenous injection preceded each time by lumbar puncture secured the entrance of the remedial agent into the intrameningeal spaces, and he cited a case in which he had pursued this course—namely, one of diffuse purulent meningitis subsequent to an acute influenzal labyrinthitis in a woman of 25, in which "in spite of the extreme gravity of the prognosis (Mygind), he observed in addition to a characteristic fall of temperature and a progressive attenuation of the clinical symptoms, a parallel improvement in the characteristics of the cerebro-spinal fluid and complete recovery." The paper containing a full statement of the experimental researches by various investigators which had led the writer to adopt the intravenous in place of the intraspinal method of injection, is to be found in *Bruxelles Médical* for Nov. 16th, 1924. Although the method is intended to bring about the local action of the remedy on the contents of the meningeal spaces, it is at the same time well calculated to combat the general septicæmia to which Dr. Nabarro alluded.

In the treatment of such a fatal disease no suggestion can be lightly thrown aside, and this is my excuse for drawing attention to Dr. Maloens's views.

I am, Sir, yours faithfully,

London, Jan. 16th, 1925. JAMES DUNDAS-GRANT.

"ELECTRONIC REACTIONS."

To the Editor of THE LANCET.

SIR,—I can only speak for myself, but I imagine that a number of other members of the Medical and Electro-Therapeutical Sections of the Royal Society of Medicine would agree with me that the communication of Sir Thomas Horder of Friday must certainly rank as one of the most extraordinary and tantalising communications that has ever been presented before a scientific society. As there was no time left for discussion, and discussion at a later date was not at present desired by those at the meeting, I can only hope that you, Sir, will allow a few comments through the columns of your journal.

Sir Thomas Horder disclaimed responsibility for the report except for a fifth share. But while on the one hand he emphatically declared for the final deposition as false gods of the oracular Abrams boxes, his acute diagnostic instinct might have warned him that the effect on the lay public and on "electronists" of the encouraging gesture he made on the other hand in disclosing the 100 per cent. accuracy of certain incompletely described physical tests with Dr. Boyd's modifications, would only be to confirm in the minds of many of the public the rightness of their view that there still "may be something" in the original Abrams boxes: and so, indeed, the *Morning Post* to-day (Saturday) interprets his Committee's Report.

One can only wish publication of any report had been delayed till further detailed announcements could be made with regard to the possible scientific or medical uses or not of Dr. Boyd's apparatus, or else that at least more information had been given as to the nature of the tests and responses in Dr. Boyd's almost magical copper-gauze-lined cabinet! A 100 per cent. accuracy is almost too good to be true in most scientific work: it suggests that some simple solution for the cause of the phenomena must be there to be found if only we can trace it. I shall only suggest briefly a few matters as to which I should have liked to have had information vouchsafed, and, indeed, before a scientific meeting might, I think, reasonably have expected information given.

1. The nature and origin of the substances used in the tests? What was used besides "sulphur"? What proof, for example, was there that there was no radium present in the "active" substance? In more detail we should have heard how the "substances"

were presented to the recording complex of apparatus and boys.

2. Without reflecting on the honesty of Dr. Boyd and Miss S., one would like to know what they did, and where they stood while the tests were going on. For unconscious deception has often been found in psychical tests, and in phenomena such as "thought-transference"—almost inaudible whispering, and the like. And in the interpretation of extraordinary phenomena every factor should be sceptically scrutinised. The "N" rays hoax was an example of how eminent scientific persons can be deceived—not that deception or hoax is here suggested.

3. What the copper-gauze screen was supposed to shield the apparatus from? Were any experiments made to test whether, for example, wireless waves were reduced in amplitude in the cabinet, or neighbouring potentials or electric fields, such as those in the electric lighting circuits, were diminished or abolished? In short, what were the physical differences between the outer room and the inside of the screened cabinet?

4. Scientific experiments and results (with the rarest possible exceptions) can be duplicated at other times and in other places. Would Dr. Boyd be willing to submit his work to a London committee in London? The copper-gauze can be duplicated: are the Glasgow boys essential?

5. What interpretation does Sir Thomas Horder give for the epigastric percussion sign? He acted as what may be called the medical referee of the Committee, and some attempt at explanation might have been expected from him at a medical gathering, of his findings on the boy, and his personal sensations when acting as indicator. The epigastric note on percussion depends obviously on two factors: (1) The contents of the stomach, transverse colon, &c.; and (2) the thickness or rigidity of the abdominal wall. With rigid rectus muscles the tympanitic note is masked, and the note is "duller." Now, if the boy whose epigastrium is percussed has an abdominal wall contraction when the "active" substance is presented, he must have that (1) voluntarily, or (2) involuntarily, as a result of some sign or sensation—e.g., when an electric current passed from his forehead electrode to the earthed plates on which he was standing.

Now, as currents as small as 10^{-12} ampère can be measured by Einthoven and Paschen galvanometers, and even smaller currents can be accurately estimated by almost infinitesimal differences of potential by quadrant electrometers and electroscopes (currents much smaller than those potential changes continually taking place at and near the epigastrium owing to heart contractions), it seems strange that physical measurements were not made, or at least were not given, of the probable current changes; also of their differentiation from those detectable by the electro-cardiograph. Indeed, with the refinements of scientific apparatus now available, it would seem difficult to realise what useful purpose the boy and his epigastrium can serve as an indicator! Is the boy as a "medium" or indicator more sensitive than a modern electrometer to potential differences? For Dr. Boyd's use of an "inductance" suggests that potential differences are at work in the production of his results.

In short, the whole position from the point of view of those of us (specially of the Electro-Therapeutical Section, who were invited to the meeting, and were unable to express any opinions) who *do* know something of electrons, and of electrical apparatus and measurements, was left most unsatisfactory, if not ridiculous. The whole matter seemed to be as yet of no medical interest, yet medical developments were hinted at; so I can only suggest to Sir Thomas Horder and his Committee that it might be well to allow a full and unbiased investigation to be conducted by a representative committee of, say, physicists such as Profs. Sidney Russ and F. L. Hopwood, or physiologists who are familiar with physical experiments in medical subjects. Then one may hope Dr. Boyd's vaunted advance on Abrams's methods will be removed from the atmosphere of thaumaturgy in which I, for one, felt the subject was left by the communication to the meeting on Friday.

I am, Sir, yours faithfully,

J. H. DOUGLAS WEBSTER.

Chandos-street, Cavendish-square, W., Jan. 17th, 1925.

THE GLUT OF WOMEN DOCTORS.

To the Editor of THE LANCET.

SIR,—I am sure that medical women will be grateful to Mr. W. Robinson for giving the number of applicants—namely, 78 women doctors—for a junior post open to women only at the Children's Hospital, Sunderland. His letter draws attention to such a serious state of afiairs that the widest publication is necessary in order to secure a remedy. I refer to the fact that owing to the few hospital posts (junior, senior, or honorary) now open to well-qualified medical women, it naturally follows that when one post is available there will be a greater number of women candidates than a similar post when male applicants are required. I think one may safely say that 99 out of 100 posts as house physicians and house surgeons are regarded as the strict preserve of young male doctors owing to the policy pursued by the selection committees of voluntary hospitals up and down the land to exclude women doctors.

During the war there was a greater influx of both sexes of medical students to supply the needs of the nation, and the maximum was reached in 1919. In 1924 there came out a maximum of qualified men and women doctors from the medical schools. But even with this increase the proportion of the newly qualified is about one woman doctor to five men. The total registered number of medical women is somewhere about 2000 in Great Britain, and the medical men registered are about 25,000. It is also true that the number of medical students (men and women) entering the schools is returning to the pre-war level. What is really needed is fair treatment for women from the selection committees so that there is an increase in proportion of all hospital posts that are open to women. Why is it that there are so few hospitals which have appointed on their honorary staffs women doctors in charge of beds? Yet the numbers of women and children to men patients to be treated are as 3 to 1 of all patients. Pure prejudice on the part of the male colleague, I fear, must be the answer.

Public opinion has always been on the side of the women doctor, who must be allowed the same facilities to equip herself as her male colleague. With the changes that must necessarily come over hospital management and finance, the methods of appointment must also change. I am sure the day will come when the hospital patient will have the right of access to the services of a woman doctor. Every hospital which relies on an appeal to the public for support will have to see that a proportion of the honorary staff are women.

I am, of course, quite aware that Mr. Robinson's letter is meant as a deterrent and warning to parents and intending medical women candidates as threatening future unemployment for medical women. Let me tell them to take no heed of such Partingtons, for the public needs and demands medical women in many and ever-widening spheres. Our movement has too strong a hold to be pushed back, much as the reactionary would like it.

I am, Sir, yours faithfully,

MABEL L. RAMSAY, M.D., L.R.C.S. Edin.

Plymouth, S. Devon, Jan. 18th, 1925.

To the Editor of THE LANCET.

SIR,—Allow me to make some comments on Mr. Robinson's encouraging letter of Jan. 13th.

Although, since I am not in practice, the number of patients I come across is infinitesimal, still even I am frequently hard put to it, in an individual instance, to

recommend a medical woman, so lamentably few are they. The only case where there is anything like adequacy is in consultant gynæcological and obstetrical work in a few big towns. But a preponderance of women at the top of the tree by no means compensates for their lack elsewhere, or meets the growing demand for their services. So that the illumination Mr. Robinson sheds on the numbers of women practitioners in the making is highly gratifying.

A glance at the facts shows the shortage of medical women in a lurid light. Although men are accustomed to being tended by women in their infancy, and again perhaps later by women nurses, few would deny that it would be highly undesirable for them to be compelled to consult women rather than men doctors because there was no man within reach. A fortiori therefore, since women are not even accustomed in their infancy to be tended by men, they should not be compelled to consult a man doctor because there is no woman within reach. There will never be enough medical women in England till every woman is able to consult one if she so wishes. When one reflects further that the numbers of women patients are far greater than men because so many are included in the province of obstetrical medicine, one sees what a huge number of medical women are needed, and how ludicrous is the present proportion to men on the British register—i.e., roughly 1 to 20! Further, it is obvious that the supply of posts vacant can never be adequate to the demands of young graduates except at such times as that of the Great War, when everyone was seized on for work with avidity. But just as, at the cessation of the war, the Government found itself with surplus stocks of inanimate goods, so animate beings were also stranded, and unemployment is rife everywhere. Medical students preparing for service now find themselves qualified with no immediate demand for their work, just as do members of other professions.

It may be that medical women are taking rather longer than medical men to get absorbed in the general population, and here again Mr. Robinson's carefully analysed figures are very illuminating. Of the 78 applicants only 16 had London diplomas. Inasmuch as women from five or six London schools besides the provinces take London qualifications it is obvious that only a small fraction of these come from the London women's school—i.e., a school where only women are trained has very few of its students seeking work so far afield. This is what one would expect. It is natural that where women form only a small (new) proportion of graduates, their interests should not be pushed, when the staff, dean, and warden are all men. "Fellow-feeling," to say nothing of custom, tends to the forwarding of men's interests. The same applies to the boards of management of all hospitals. They are almost entirely composed of men, and tend to appoint such.

At any rate, some 30 years ago the number of women qualified to posts available was in a much higher proportion than now; and just as the members of the then "glut" have long ago resolved themselves into useful, busy, and most prosperous citizens whom the community could ill spare—so we rejoice that history is repeating itself, and that the members of another delightfully large "glut" are waiting for absorption in the same way!

I am, Sir, yours faithfully,

H. B. HANSON, M.D., B.S., D.P.H.

Circus-road Mansions, N.W., Jan. 19th, 1925.

UNIVERSITY OF VIENNA: FACULTY OF MEDICINE.—The programme of the Sixteenth International Course of Lectures on Medicine, which is to take place in Vienna from Feb. 9th to 21st, has reached us. The course will deal with the Diseases of the Digestive Organs and their Therapeutics. A practical course following the lectures will be held from Feb. 23rd to 28th. Those taking part in the course include Profs. J. Tandler, H. H. Meyer, K. Sternberg, K. F. Wenckebach, C. Pirquet, among many others. Foreign medical men who desire to attend are asked to communicate with Dr. Kronfeld, Porzellangasse 22, Vienna IX.

Obituary.

CLEMENT DUKES, M.D., B.S. LOND., F.R.C.P. LOND.

Dr. Clement Dukes, for 37 years medical officer at Rugby School, had a deserved, even a world-wide, reputation as an authority on the health of the schoolboy. His death occurred on Sunday last, Jan. 18th, at the age of 79.

Clement Dukes was born in 1845, son of the Rev. Clement Dukes. He received his medical education at St. Thomas's Hospital where he was a distinguished student, graduating in 1869 at the University of London with honours in medicine, and in surgery with the gold medal. After holding house appointments at St. Thomas's Hospital and at the Hospital for Sick Children, Great Ormond-street, other clinical appointments at the City of London Hospital for Diseases of the Chest and at the Royal Ophthalmic Hospital, Moorfields, he was appointed in 1871 medical officer at Rugby, which post he held until his resignation in 1908. He served under four head-masters, Canon Hayman, whose removal from office two years later was the subject of prolonged litigation, Dr. Jex-Blake, Dr. Percival, afterwards Bishop of Hereford, and Dr. James. While holding this position he proceeded to the M.D. of London in 1876 and was later elected a Fellow of the Royal College of Physicians. On his retirement he was appointed consulting physician to the school.

Dukes was the fortunate possessor of an orderly mind and great literary capacity—knowing much, he was able to record his knowledge in assimilable form. He was the author of "Health at School," which went through four editions, and remains a standard work even though developments along many lines have rendered some of his reflections obsolete; of "The Preservation of Health by Cleanliness and Temperance," which was awarded the Howard Medal and a money prize by the Royal Statistical Society; of "The Essentials of School Diet," which passed through two editions; and of "L'Hygiène et l'Education de l'Adolescence," which gained the silver medal of the Société Français d'Hygiène, much of the information being strikingly new to a French audience. He also wrote the articles "The Hygiene of Youth" in Allbutt and Rolleston's System of Medicine, and "Scarlet Fever and Rubella" in the Encyclopædia of Medicine, his last work being "The Fourth Disease," published in 1901 and following his attempt in the columns of THE LANCET to establish the clinical entity of a certain group of febrile symptoms accompanied with rash.

Dukes will long be remembered by his earliest work "Health at School," which had its origin in a communication to the popular compendium "A Book of Health," compiled by Sir Malcolm Morris some 15 years after Dukes had started on his life-long association with Rugby. There had been before this date many disconnected articles dealing with school health, referring in particular to positions at the great private enterprises called public schools. Many of these contributions had arisen out of particular occurrences like outbreaks of enteric, ophthalmia, or ringworm, but the subject of public school life in its general sanitary aspects had never before been considered comprehensively, with outbreaks of disease taking part in the plan as episodes requiring preventive as well as curative measures. Dukes's book was found at once to deserve careful study by parents and all school authorities, head-masters, house-masters, and form-masters alike. The sanitary construction of boarding-houses, as it was then understood, was set out as well as the need for proper attention to diet and to hours of work and play. Dukes indicated clearly that the amount of work which can be safely done may be ascertained by general rules, but that these may need in individual cases special adaptation where the collateral circumstances of the age and

health of the boys are considered. He pointed out on the subject of overwork the necessity of discrimination by the authorities upon medical advice between laziness and sickness, the symptoms of pressure not necessarily depending upon the stress of lessons, but sometimes upon disinclination and sometimes upon physical disability. He further discussed the medical arrangements for the treatment of disease in a school population and for the isolation of infections, pointing out the need for the quarantine of doubtful cases until their exact nature had been determined. The book was prepared with great care; it showed a practical knowledge on the part of the author of the subjects of which he treated, as well as prevision in directions where developments might be expected. The success of the work was as certain as it was well-earned.

His name again will in text-books be long connected with the question of the existence of the "Fourth Disease." He described in THE LANCET[1] three outbreaks of an infectious disease having characteristics sufficiently constant to entitle it to be considered an entity, and differing in definite respects from measles, German measles, and scarlet fever. Dukes's description of "Fourth Disease" was accepted at the time by many medical men as satisfying them that certain cases which had come under their care had belonged to this special category, but the leading authorities upon the subject of fevers do not to-day acquiesce in his theories.

Although it was as medical officer to Rugby School that Dukes substantially led his life, he took considerable part in public affairs. He was for years on the staff of the St. Cross Hospital, Rugby, was surgeon-colonel V.D. Midland Brigade and 2nd V.B. Royal Warwickshire Regiments, a medical referee under the Workmen's Compensation Act and the Mental Deficiency Act, and a justice of the peace for Warwickshire. He was twice married, first to Alice Mary Harford, who died very shortly afterwards, and secondly to Florence Emma, daughter of Mr. J. W. Battley, of Enfield, and had five sons and four daughters. We join with these, and with Dr. Dukes's many professional and personal friends, in regret at the death of a distinguished medical worker and pioneer.

LILLIAS HAMILTON, M.D. BRUX., L.R.C.P. & S. EDIN.

Lillias Hamilton, who died recently at Nice, was, when at school at Cheltenham, stimulated by Miss Beale to adopt some profession. She trained first as a nurse at the Liverpool Infirmary and later as a doctor at the London School of Medicine for Women and the University of Edinburgh, qualifying L.R.C.P. & S. Edin. and M.D. Brux. in 1890. The story of her life shows her to have had an enterprising and adventurous spirit. To those who knew her even slightly her energy and strength of purpose were apparent, while even in her books, especially in "The Vizier's Daughter," these qualities manifest themselves. Indeed, any girl who qualified in medicine 35 years ago, having previously submitted to the rigorous discipline of a hospital nurse's training, must have had a will of no common order. She might well have emerged from these strenuous years of preparation with the spirit of adventure somewhat dimmed, but Dr. Hamilton evidently took work easily in her stride as a preliminary to a life's career which proved as full of colour as even a school-girl's imagination could have painted it. From private practice in Calcutta, and the charge of the Dufferin Hospital there, she became court physician to the State of Afghanistan and established at Kabul a hospital whence at least some of the Western views on hygiene and the care of the sick spread to the surrounding population. She lost her own health in India while promoting that of others, and returned to this country in 1898, when, after a period of private practice, she became warden of the Studley Horticultural and Agricultural College for Women. During the war she returned to medicine as officer in charge of a hospital in Montenegro, afterwards resuming her task at Studley of training women students to follow expertly yet another of the professions.

She will be remembered as one of the outstanding women of a transition period.

[1] THE LANCET, 1900, ii., pp 89, 114, 289, 1384.

PHILIP PREBBLE, M.B., C.M. ABERD.

THE sudden death of Philip Prebble on Jan. 10th at his residence in Blackburn at the age of 59 removes one of the most respected practitioners of the town. Dr. Prebble was a native of Blackburn and received his early education there. He studied medicine at the University of Aberdeen, graduating M.B. and C.M. in 1895. He took post-graduate courses at Manchester, New York, and at various continental clinics before settling in Blackburn. He was appointed assistant physician to the Blackburn and East Lancashire Royal Infirmary in 1905, and at the time of his death was the senior physician at this institution. A life member of the Pathological Society of Manchester, he was also a former president and treasurer of the Blackburn District Medical Society, and a member of the Manchester Medical Society. He was at one time chairman of the Blackburn division of the British Medical Association, medical officer for the Blackburn Union Cottage Homes, and district medical officer for the Blackburn Union. Dr. Prebble was one of the few local medical practitioners who did not apply to be placed on the panel under the National Insurance Act. Later, he was elected a member of the Medical Service Subcommittee and chairman of the Pharmaceutical Subcommittee, and vice-chairman of the Finance and General Purposes Committee. He was for a few years a member of the Municipal Council.

Public Health Services.

HOSPITAL NOTES.

SCOTTISH HOSPITAL INQUIRY.

THE inquiry opened recently in Edinburgh into hospital needs in Scotland is of vital public importance. The Committee was appointed last June by the late Government to inquire into and report upon the extent and nature of the inadequacy of the present hospital and auxiliary services in Scotland and to make recommendations for the development and maintenance of those services to meet the needs of the community. The chairman, Lord Mackenzie, in opening the inquiry, stated that the remit was wider than the similar inquiry held in England, as it covered, in addition to voluntary hospitals, public health and Poor-law hospitals.

Evidence was opened by Mr. A. E. Maylard speaking for the city of Glasgow, who said that the present provision was not meeting the demand; this might be measured by the long waiting lists and the difficulty experienced by practitioners in getting patients into hospital. Prof. G. L. Gulland, speaking for Edinburgh, said accommodation was inadequate, and pointed out that the demands made upon voluntary hospitals by the community are in the future likely to increase owing to the ever-rising standard of diagnosis; further accommodation was even needed for acute illness. He suggested that auxiliary hospitals attached to the central hospitals should be provided, to which patients might be transferred after a shorter stay in the general hospital.

Sir David Wallace urged the utilisation of Poor-law hospitals to relieve the congestion; there was a great objection, due to the stigma of pauperism, on the part of many patients to entering these institutions; if this could be removed and the hospitals well staffed, there was no reason why they should not gain a reputation for good work and, moreover, patients would enter them unhesitatingly. The fact that

increase in hospital beds for patients must mean increased accommodation for the nursing staff had been lost sight of in the past, with the consequence that nurses were often "more or less stowed away" instead of being well housed and cared for. He was convinced that philanthropists were unlikely to support a State hospital, and this opinion was generally accepted.

Regarding maternity needs, Prof. B. P. Watson alluded to his experience in Toronto, where for many years he held a post in a maternity hospital of 600 beds of which about 150 were for private patients. All patients in this hospital paid for their maintenance; if they could not pay for themselves the municipality paid for them. There was no Poor-law in Canada; the private patients were accommodated in a separate block for which extra payment had to be made, and doctors were paid fees by patients in the private block. In Scotland, he said, there was urgent need for hospital accommodation for maternity cases; centres should be established in the larger towns where expert obstetricians were available.

Prof. T. K. Munro (Chair of the Practice of Medicine, Glasgow University) spoke of the inadequacy of the accommodation for surgical and tuberculous cases. He was opposed to the idea of voluntary hospitals taking paying patients. He would leave the Poor-law hospitals as they are, but thought that State contributions to capital expenditure might be accepted without detriment to the voluntary principle.

The inquiry is still proceeding and evidence is to be taken from well-known practitioners. The general consensus of opinion appears to be that the maintenance of the present voluntary system is desirable, but that increased accommodation is an urgent necessity; this might be achieved most easily by the institution of inexpensive auxiliary hospitals somewhat of the nature of convalescent hospitals. Some method of coördination between the various areas might be helpful. It was generally accepted that State control, or at least State aid, would be undesirable.

MEDALS FOR NURSES AT SHEFFIELD.—The committee of Sheffield Royal Infirmary has decided to award annually a gold, a silver, and a bronze medal to nurses for good ward work, general conduct, and examination results. Each year three nurses will receive four months' midwifery training at the Jessop Hospital. A large house close to the Royal Infirmary has been acquired to augment the accommodation for the nurses, who have been increased in strength in consequence of the growth of the number of beds, which now exceeds 500.

NOTTINGHAM CRIPPLES' GUILD.—The Duchess of Portland has laid the foundation-stone of a preventive, after-care, and training centre which is being built by the Nottingham Cripples' Guild at a cost of £7000. It is intended to deal with potential cripples, with children returning from special hospitals, and with those for whom vocational training can be provided. During the last six months there have been 4000 attendances at the present inadequate premises, and Mr. S. A. S. Malkin, the orthopædic surgeon at the clinic, stated that there is a very definite cripples' problem in Nottingham.

KING EDWARD VII. HOSPITAL, WINDSOR.—The recent opening of the new nurses' hostel has enabled the setting aside of ten separate rooms as a paying ward. The ward is equipped with a special staff of nurses and is separate from the other portion of the hospital, but participates in all its advantages.

HOSPITAL SATURDAY FUND.—The income in 1924 exceeded that of 1923 (£100,765) by over £6000. The business house, workshop, and factory collections amounted to £79,583.

A FRIENDLY SOCIETIES' COLLECTING SCHEME.—The first year's working of a collecting scheme initiated by the local friendly societies in aid of the Bath Royal United Hospital has produced £4900; 50 per cent. more was collected in the fourth quarter than in the first. The hospital serves a population of approximately a quarter of a million, and its area extends roughly from Swindon in North Wiltshire to Shepton Mallet in North-East Somerset, but the scheme has so far covered only about one-half of this wide district. Interest in the movement has been noticeably stimulated by the organisation of visits to the hospital by stewards of districts, collectors, contributors, and the general public.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 10TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—small-pox, 91; scarlet fever, 1738; diphtheria, 1047; enteric fever, 49; pneumonia, 1292; puerperal fever, 49; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis, 2; encephalitis lethargica, 45; dysentery, 3; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were reported from the several counties, as follows: Chester 2 (Dukinfield); Derby 12 (Derby C.B. 4, Bolsover 1, Chesterfield 3, Chesterfield R.D. 3, Shardlow R.D. 1); Lancaster 1 (Ashton-under-Lyne); Lincoln Holland 1 (Boston R.D.); Lincoln Lindsey 4 (Gainsborough); Northumberland 17 (Ashington 1, Weetslade 11, Morpeth R.D. 5); Notts 23 (Hucknall 10, Kirby-in-Ashfield 11, Skegby R.D. 2); Warwick 7 (Coventry C.B. 1, Nuneaton 4, Atherstone R.D. 2); Yorks North Riding 22 (Middlesbrough C.B.); Yorks West Riding 2 (Bradford C.B. 1, Wortley R.D. 1).

Deaths.—In the aggregate of great towns, including London, there were 7 deaths from enteric fever, none from small-pox, 23 from scarlet fever, 47 from diphtheria, 79 from measles, 124 from influenza (as compared with 100 and 83 in the two preceding weeks). In London itself the deaths from diphtheria numbered 9 and from whooping-cough 18.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The second of the present series of lectures will be delivered by Sir Humphry Rolleston on the Medical Aspects of Gall-stones on Jan. 30th, at 1, Wimpole-street, W., at 5.30 P.M. A combined course in Diseases of Children, arranged by the Paddington Green Hospital, Victoria Hospital, and the Children's Clinic, will begin on Feb. 2nd. There will be two sessions daily at 10 and 2 during the three weeks of the course. A four weeks' course starting on Feb. 2nd will be held at St. John's Hospital for Diseases of the Skin. A comprehensive course at the London Lock Hospital runs from Feb. 2nd until the 26th; early application for this course is desirable. Eight clinical demonstrations on Tropical Diseases will be given twice a week at the School of Tropical Medicine by Dr. G. Low and Dr. P. Manson-Bahr from Feb. 3rd. The course in Gynæcology at the Chelsea Hospital for Women, due to begin on Feb. 2nd, has been postponed until March 16th. From Feb. 16th to 28th the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham, N.) is holding an intensive course. The programme will cover the whole day, and will include all the general and special departments of the hospital, in addition to a special lecture each day at 4.30 P.M., free to members of the Fellowship of Medicine. The lecturers will be Mr. James Sherren, Dr. H. W. Barber, Dr. P. Manson-Bahr, and Mr. H. D. Gillies, as well as members of the permanent teaching staff. On the Saturday mornings there will be demonstrations of cases at associated hospitals: on the Early Diagnosis of the Infectious Fevers at the North-Eastern Fever Hospital, by Dr. Frederic Thomson; and on Mental Diseases at the L.C.C. Mental Hospital, New Southgate, N., by Dr. S. J. Gilfillan. The names of those wishing to attend this course should be sent to the Secretary of the Fellowship of Medicine, or to the Dean, Dr. A. J. Whiting, at 19A, Cavendish-square, W. 1, not later than Feb. 13th. Apart from the foregoing special courses, the general work, as indicated in the Fellowship *Bulletin*, is available and can be begun at any time. Copies of the syllabus of the above-mentioned courses and the *Bulletin* may be obtained on application to the Secretary at 1, Wimpole-street, W. 1.

MOORFIELDS RESEARCH SCHOLARSHIP.—A scholarship of the value of £50 per annum, tenable for one year, but renewable for a second year, is being offered at the Royal London Ophthalmic Hospital. The scholar will be required to give three mornings a week to research at the hospital on subjects approved by the Medical Board. Applications should be sent to the hon. secretary, Medical Board, Moorfields Eye Hospital, City-road, London, E.C. 1, not later than Jan. 31st, if possible with suggested subjects of research.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Jan. 12th, the following were admitted as Honorary Fellows: Sir Humphry D. Rolleston, Bart., K.C.B., President of the Royal College of Physicians, London; Sir Archibald E. Garrod, K.C.M.G., F.R.S., Regius Professor of Medicine in the University of Oxford; and Lieut.-Colonel Sir Leonard Rogers, C.I.E., F.R.S., formerly of the Indian Medical Service and Professor of Pathology in the Medical College, Calcutta. Mr. Tom John Honeyman, M.B., Ch.B. Glasg., was admitted (after examination) as a Fellow of the Faculty.

MANCHESTER AND A CANCER COMMITTEE.—The Manchester Public Health Committee have agreed to coöperate in the work of forming a local cancer committee. Dr. R. Veitch Clark, the medical officer of health, last summer privately invited a number of medical men and others interested in the subject to meet and discuss the position. After several meetings of this unofficial committee it has now been arranged that a local cancer committee be established with representatives of the local hospitals, the University, the corporation, medical men, and others concerned. The Public Health Committee will be officially represented and take part in the proceedings. The new committee will consider the medical, industrial, and geographical aspects of the subject.

ALL-RUSSIAN CONGRESS ON MALARIA.—The Third All-Russian Congress on Malaria will be held in Moscow from Feb. 3rd to 8th. The Congress will discuss the epidemiology of malaria, the fight against malaria in Russia, and a number of scientific questions. Among those invited to the Congress are representatives of the Commissariat of Public Health of regional, provincial, and border districts of Russia; representatives of the malaria centres, of the health resorts and watering places, and of the war sanitary districts; as well as the representatives of the Central Committee of the Professional Union and the Central Board of the Social Insurance Service, of the medical societies, and of all the medical organisations of the Soviet Republics. All inquiries are to be directed to the Sanitary Epidemiological Department, Narkomsdrav Moscow, Maly Tcherkassky Pereulok, Moscow.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirteenth meeting of the Commission was held at the Home Office, Whitehall, on Jan. 15th, Lord Lawrence of Kingsgate in the chair. Mr. Joseph Cave, High Chief Ruler of the Independent Order of Rechabites, and Mr. Jonas P. Illingworth, a director of that Order, were examined on the following subjects: The rates of cash benefits, the deposit contributors' scheme, the administration charges, and the extension of medical benefit. Thereafter evidence was heard on behalf of the Rational Association Friendly Society, represented by Mr. Jonathan Duncan, general secretary, and Mr Harry Bailey, assistant secretary. Questions as to the age limits for insurance, the size of societies, extension of benefits, workmen's compensation, and dental benefit were dealt with.

JUBILEE OF THE ROYAL SANITARY INSTITUTE.—This Institute came into being in 1876 for the purpose of aiding the carrying out of the provisions of the general Public Health Act of the previous year. It arranged congresses and meetings for the discussion of problems and procedure, exhibitions for showing sanitary appliances and encouraging their development, and training and examinations for sanitary officers. This work has been actively continued and developed for a period of 50 years, and the operations of the Institute have been extended throughout the United Kingdom and also to the overseas dominions of the Empire. By these means the Institute has taken a large part in educating the people in public health and in qualifying men and women to undertake official duty, thus rendering easier and more effective the work of public authorities in carrying out their health measures. It has been decided to celebrate the occasion of the jubilee of the Institute in 1926 by holding a congress in London, and it is hoped to make it an opportunity for gathering together those engaged in public health work from all parts of the Empire and for bringing responsible opinion to bear on the many questions affecting the health of the people.

FOUR free lectures on the Bodily Senses and their Mental Representation will be delivered by Sir Robert Armstrong-Jones, at Gresham College, Basinghall-street, London, E.C., on Jan. 27th, 28th, 29th, and 30th, at 6 P.M.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of this fund, held on Jan. 20th, Surgeon Vice-Admiral Joseph Chambers being in the chair, the sum of £60 was distributed among the several applicants.

ROYAL INSTITUTE OF PUBLIC HEALTH. — The Harben lectures will be delivered in the Lecture Theatre of the Institute at 37, Russell-square, London, W.C., by Prof. E. L. Collis on Phthisis and Industrialism (National and Occupational) with Reference to Other Infectious Diseases, at 4.30 P.M., on Jan. 26th, 27th, and 28th. Admission is free.

NORTH-WESTERN TUBERCULOSIS SOCIETY. — A meeting will be held on Jan. 29th, at 3.15 P.M., at the Public Health Laboratories, York-place, Manchester, when Prof. W. W. C. Topley will read a paper on Some Problems of Infection and Resistance in Tuberculosis in the Light of Recent Research. All medical practitioners interested are invited to attend.

THE LATE DR. JOHN FRASER.—The death is recorded at the age of 80 of Dr. John Fraser, who was a Commissioner in Lunacy for Scotland from 1895–1910, following on a period of seven years as Deputy Commissioner. Dr. Fraser graduated M.B., C.M. Edin., with first-class honours in 1870, and became F.R.C.P. Edin. in 1895. He was a keen botanist, and was a Fellow of the Royal Society of Edinburgh.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Jan. 26th.

ODONTOLOGY: at 8 P.M.
Casual Communication:
Mr. G. F. Cale Matthews: A Case of Long-standing Insomnia Cured by the Extraction of Pulpless Teeth.
Paper:
Mr. L. E. Claremont: The Problem of Pulpless Teeth.

Tuesday, Jan. 27th.

PSYCHIATRY / NEUROLOGY / DISEASE IN CHILDREN / EPIDEMIOLOGY — *Special Discussion* (adjourned): at 8.30 P.M.: The Mental Sequelæ of Encephalitis Lethargica.
Speakers:
Dr. J. C. Spence, Dr. C. Worster-Drought, Dr. E. Mapother, and others.

Wednesday, Jan. 28th.

COMPARATIVE MEDICINE: at 5 P.M.
Discussion on
Canine Jaundice, with Special Reference to Leptospiral Infection (with epidiascopic illustrations), to be opened by Dr. C. C. Okell, Mr. T. Dalling, and Mr. L. P. Pugh.

Thursday, Jan. 29th.

UROLOGY: at 8.30 P.M.
Discussion:
Radiotherapy and Electrotherapy in Diseases of the Bladder and Prostate.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Jan. 26th.—8.30 P.M., Prof. A. Castellani: Parenteric Fevers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Jan. 26th.—5 P.M., Sir Arthur Keith: Recent Discoveries of Fossil Man. (Hunterian Lecture IV.)
WEDNESDAY.—5 P.M., Lecture V.
FRIDAY.—5 P.M., Lecture VI.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.
MONDAY, Jan. 26th, to SATURDAY, Jan. 31st.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine, and open to all members of the profession. At 5.30 P.M. Friday, Jan. 30th, Sir Humphry Rolleston, Bt.: The Medical Aspect of Gall-stones.—WEST END HOSPITAL FOR NERVOUS DISEASE, 73, Welbeck-street, W. Intensive course in the Diagnosis and Treatment of Common Diseases of the Nervous System. Daily, at 5 P.M., Lectures, including clinical demonstrations upon selected cases.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Tuesday and Saturday, at 11 A.M., Lecture-Demonstrations by Dr. Porter Phillips and Dr. Thomas Beaton.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Jan. 26th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.
TUESDAY.—11 A.M., Dr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Sinclair: Surgical Dyspepsia. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10.30 A.M., Dr. Pritchard: Medical Wards. 10 A.M., Sir Henry Simson: Gynæcological Operations. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M., to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
TUESDAY, Jan. 27th.—4.30 P.M., Mr. N. B. B. Fleming: Eye Changes as Signs of Organic Disease.
FRIDAY.—4.30 P.M., Dr. C. E. Sundell: Enuresis.
Daily: In- and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Jan. 29th.—4 P.M., Dr. Harrison: Routine Clinical Examination of the Urine.

ROYAL DENTAL HOSPITAL OF LONDON POST-GRADUATE LECTURES.
FRIDAY, Jan. 30th.—5 P.M., Mr. D. P. Gabell: Partial Dentures.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Jan. 27th.—5 P.M., Dr. A. M. H. Gray: Xanthoma; Herpes.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Pemphigus and Allied Eruptions.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.
TUESDAY, Jan. 27th.—4 P.M., Prof. A. Patrick: Clinical Application of Tests for Renal Efficiency. Discussion to be opened by Dr. Orr and Dr. Hynd.
SATURDAY.—A meeting of the Association for Clinical Investigation will be held in Edinburgh. The morning session will be in Prof. Murray Lyon's Wards in the Royal Infirmary at 11 A.M. An afternoon session will be held, the subject and time of meeting being announced at the morning meeting.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, Jan. 26th.—(At the Children's Hospital.) Mr. McMurray: Paralyses.
TUESDAY.—(At the Southern Hospital.) Mr. O. H. Williams: Colitis.
WEDNESDAY.—(At the Northern Hospital.) Dr. Murray Bligh: Broncho-pneumonia.
FRIDAY.—(At the Royal Infirmary.) Mr. Hallam: Dental Disease in Relation to General Medicine.

Appointments.

COHEN, J., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer, Paddington Casual Wards, Metropolitan Asylums Board.

MITCHELL, A. PHILP, M.D., M.Ch., F.R.C.S. Edin., Assistant Surgeon to Leith Hospital.

Certifying Surgeons under the Factory and Workshop Acts: DUNCAN, C., M.B. Durh. (Chester-le-Street); MACINTOSH, J. F., M.B., Ch.B. Aberd. (Braemar); WIGAN, C. A., L.R.C.P. Lond., M.R.C.S. (Portishead); GERRARD, R. F., L.R.C.P. Lond., M.R.C.S. (Ellesmere); ROBEY, W. C. T., L.R.C.P., L.R.C.S.I. (Eastwood, Notts); HOLMES, A. M., M.B., Ch.B. Edin. (Heanor, Derby); PATON, W. R., M.B., C.M. Glasg. (Ilkeston).

Vacancies.

For further information refer to the advertisement columns.

Blackburn County Borough.—M.O.H. and Sch. M.O. £1000.
Cardiff City.—Asst. M.O. £600.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Second Res. H.S. £75.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. at rate of £125.
Gloucester, Gloucestershire Royal Infirmary, &c.—Asst. H.S. £150.
Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. £300.
Hospital for Sick Children, Great Ormond-street, W.C.—Cas. O. £400.
Huddersfield Royal Infirmary.—Sen. H.S. £225.
Hull Infectious Diseases Hospitals.—Res. M.O. £400 plus bonus.
Hull Royal Infirmary.—H.P. £200.
L.C.C.—Jun. Asst. M.O. Mental Hospitals. £432.
London Hospital, Whitechapel, E.—Obstet. and Gynæcological Reg. and Tutor. £400.
London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas. Anæsthetist.
Maidstone, Kent County Ophthalmic Hospital for Diseases of the Eye, Ear, Nose, and Throat.—Hon. Rad.
Manchester, Ancoats Hospital.—Two H.S.'s. First 6 months at £100. Second 6 months at £150.
Manchester, Baguley Sanatorium.—Two Asst. M.O.'s. Each £350.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—H.S.'s at rate of £200.
Mount Vernon Hospital, Northwood, Middlesex.—Jun. Asst. M.O. £75.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. Cas. H.S. at rate of £100.
Royal London Ophthalmic Hospital, City-road, E.C.—Four Refraction Assts. at rate of £100 each. Research Scholarship. £50.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. at rate of £180.
St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—H.S. £200.
St. Mary's Hospital, W.—Asst. Pathologist. £500. Cas. H.S. at rate of £100.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. at rate of £100.
Seamen's Hospital Soc., Dreadnought Hospital, Greenwich.—P.
Seamen's Hospital Soc., Hospital for Tropical Diseases, Endsleigh Gardens, N.W.—Med. Supt. £250.
South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Assts.
Staffordshire Education Committee.—Asst. Sch. Med. Insp. £600.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Second Res. M.O. at rate of £250.
Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £500.
West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Anæsthetist, &c.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Highbridge, Somerset; Friockheim, Forfar; and Stillington, Durham.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for Dundee District (Sheriffdom of Forfar). Applications should reach the Private Secretary, Scottish Office, not later than Feb. 9th.

Births, Marriages, and Deaths.

BIRTHS.

ATKINSON.—On Jan. 10th, at Stainer-street, St. Thomas's-street, S.E., the wife of Dr. C. Hewitt Atkinson, of a daughter.
CADE.—On Jan. 15th, at Harley-street, W., the wife of Stanford Cade, F.R.C.S., of a daughter.

MARRIAGES.

CHURCHER—LANCASTER.—On Jan. 13th, at Christ Church, Westminster, Duncan Gillard Churcher, M.D., F.R.C.S., of Tarporley, Cheshire, to Nancy Thursfield Lancaster, M.R.C.S., L.R.C.P.
FELLOWS—GRIFFITHS.—On Jan. 13th, at Berhampore, Ganjam, India, Rev. B. F. W. Fellows, B.A., Baptist Missionary Society, Balangir, Orissa, India, son of late Mr. G. W. Fellows and Mrs. Fellows, London, to Alice Muriel Griffiths, M.D., B.S., Baptist Mission Hospital, Berhampore, younger daughter of Mr. and Mrs. T. L. Griffiths, of 27, Richmond-road, Cardiff. (Cabled.)
GLEN—DIXON.—On Jan. 17th, at St. Cuthbert's Church, London, S.W., Archibald Glen, L.R.C.P., M.R.C.S., to Enid Marcella Dixon, L.R.C.P., M.R.C.S.
WALKER—NICOL.—On Jan. 14th, William Wood Walker, M.B., to Rosabel, youngest daughter of Mr. and Mrs. George C. Nicol, Sarre-road, N.W.

DEATHS.

DINGLEY.—On Jan. 16th, at "St. Norberts," Sutton, Allen Dingley, F.R.C.S., aged 68 years.
DUKE.—On Jan. 17th, Maurice Smelt Duke, M.R.C.S., L.S.A., late of Kennington Park-road, aged 73.
IRVINE.—On Jan. 14th, at Westminster Hospital, the result of an accident, Lieut.-Colonel Lewis Irvine, late R.A.M.C., of Whitehall Court, S.W.
MACMUNN.—On Jan. 12th, at a nursing home in London, James MacMunn, M.D., F.R.C.S., Easkey, Co. Sligo, aged 69 years.
SHURLOCK.—On Jan. 16th, at a nursing home, Arthur George Shurlock, M.A., M.B., B.Ch., D.P.H. Camb., M.R.C.S., L.R.C.P., of Lime-avenue, Derby, and recently of Brockenhurst, Hants, aged 30.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

TOBACCO, HEALTH, AND EFFICIENCY.

A Statistical Inquiry into the Physiological Effects of Smoking Tobacco, Conducted at Antioch College, Yellow Springs, Ohio, U.S.A.

BY J. ROSSLYN EARP, M.A. CAMB., M.R.C.S. ENG.

ONE of the most sustained indictments of tobacco—sustained, that is, by number of witnesses rather than by weight of evidence—is that it injures the wind. So commonly is this believed to be true that athletic coaches the world over will prohibit use of tobacco to their teams in training. If breathlessness is really increased by the use of tobacco this must be due to poisoning either of the respiratory machinery or of the nerves or muscles of the heart or of the oxyger-carrying materials of the blood-stream itself. In the following study, endeavour has been made to evaluate by quantitative methods the actual effect on the function and efficiency of the cardiac and respiratory organs of slight, moderate, or heavy use of tobacco. No observations have been made on the effect of smoking on the chemistry of the blood.

Division of smokers into light, moderate, and heavy groups must obviously be made by arbitrary methods and can be only approximately correct. No account can be taken of the possible variations in toxicity of different brands of tobacco or in the wide variations in the size of pipes and the completeness of combustion. For the purpose of this study a man was considered to be a light smoker if he used two cigarettes, one pipe, or one cigar or less per day, a moderate smoker if he used up to ten cigarettes, three pipes, or two cigars a day, and a heavy smoker if he used more than this.

The material for this study is derived from the medical examination given to every Antioch student each year. For various reasons only records of the men are being used. The results are shown in Table A.

TABLE B.—*Showing Distribution of Non-smokers, Light, Moderate, and Heavy Smokers in Winners of Intramural Track Meet, May, 1924.*

Event.	First place.	Second place.	Third place.
100 yards dash	H	N	—
Shot put	M	N	(H) ?
220 yards dash	N	N	—
Pole vault	N	N	—
Javelin throw	N	L	—
Half-mile run	N	N	N
440 yards run	N	—	—
High jump	L	N	N
Mile run	N	N	N
Broad jump	L	N	N
Discus throw	N	(N) ?	N
Relay team	N	N	L

N = Non-smokers. L = Light smokers.
M = Moderate smokers. H = Heavy smokers.

An incidental, but very striking observation is the negative correlation shown between smoking and scholarship. Table C shows the average cumulative scholarship of the three groups

TABLE C.—*Average Cumulative Scholarship.*

Non-smokers	4·03	Heavy smokers	3·33
Light smokers	3·62	All smokers	3·45
Moderate smokers ..	3·39	All in this study	3·83
Probable error of difference, non-smokers and smokers			0·08
Difference is			0·58 ± 0·08

of smokers and of the non-smokers. For all smokers together this average works out at 3·45. Since the "probable error" of difference between the two groups "smokers" and "non-smokers" is only 0·08, whereas the observed difference is 0·58, the chances are about 500,000 to 1 against this difference being due to chance alone. A study of the psychological ratings of the two groups showed that there was no significant difference in intelligence, as measured by the Thurstone test. This observed difference in scholarship must, therefore, be due to one of two things: either the use of tobacco reacts unfavourably in some way upon mental processes or else the type of mind to which smoking appeals is a type less given to mental application. It would be possible to decide between these two explanations only if the smokers could be persuaded to desist for a year or more from their habit. It is unlikely that they can be persuaded to do this as a body. Observation will be kept on the scholastic progress of those who do stop smoking for one reason or another.

TABLE A.—*Average for Group in—*

Amount of tobacco used.	No. of cases.	*1* Standing pulse-rate.	*2* Lying pulse-rate.	*3* Difference between 1 and 2.	*4* Pulse-rate after exercise.*	*5* Difference between 4 and 1.	*6* Systolic blood pres., standing.	*7* Systolic blood pres. after exercise.*	*8* Difference between 7 and 6.	*9* Diastolic blood pres., standing.	*10* Difference between 6 and 9 (pulse pressure).	*11* Deviation from Dreyer V. C. Standard Class A.
		per minute.					millimetres.					litres.
Non-smoker	172	79	69	11	120	47	120	143	25	84	38	0·154
Light smoker	24	79	69	11	129	50	119	140	21	87	32	0·0809
Moderate smoker ..	38	80	67	13	126	47	112	135	24	84	31	0·186
Heavy smoker	70	80	69	13	123	44	119	140	23	83	35	0·069

* Lifting the body weight through 2 feet ten times in 30 seconds or approximately 3000 foot pounds of work in 30 seconds.

It is obvious without any further statistical procedure that smoking in the degree to which it is carried on by Antioch students does not materially affect the functional efficiency of the cardio-vascular system, or capacity of the lungs as measured by stated tests. It must, however, be emphasised that these tests are not all-inclusive. It may be that the coördination between the cardio-vascular and the respiratory system is less efficient in smokers than in non-smokers, or that the oxygen affinity of the blood is materially lowered in smokers by combination of carbon monoxide with the hæmoglobin. I hope later to make some research in this regard.

In the meantime Table B is a rough indication that the prejudice of the athletic coach against smoking has some justification from experience. As will be seen from Table A, there are actually more non-smokers than smokers in the college in the proportion of 172 to 132. Since the track meet was open to all comers the prizes should have gone to non-smokers in this same proportion had habitual smoking no effect on athletic ability. It will be seen that the actual distribution of prizes was overwhelmingly in favour of the non-smokers.

Summary.

Of 304 men students at Antioch College, 172 are non-smokers, while 132 use tobacco in various amounts. Although the tests of the cardio-vascular system used in medical examinations do not indicate a superiority in the physique of non-smokers, the latter prove themselves the better athletes in practice, and show a significant advance in their record of scholarship.

I have to thank Mr. M. W. Richardson for the statistical calculations in relation to scholarship, and my assistant, Mr. Louis Harap, for the laborious detailed work involved in the compilation of the remaining tables.

POPULAR TUBERCULOSIS PUBLICATIONS.

A VERY welcome sign of the growing recognition of the value of propaganda in the campaign against tuberculosis is to be found in the increasing number of publications dealing with tuberculosis in a popular manner. We need only mention a couple of such periodicals. *Commonhealth* is issued by the Tuberculosis Committee of the Belfast Corporation in the interests of general health and the prevention of tuberculosis. The first number, which runs to eight pages, is an excellent example of a publication which aims at being educational as well as readable, and its editor, Dr. A. Trimble, has introduced so much variety into his menu, not omitting the lighter touch, that his work is sure to enjoy general appreciation. Another popular publication, which we hope deserves the term "periodical," is the *Christmas Magazine* of the Bridge of Weir Sanatorium. Like the average school magazine, it contains much that is of strictly local interest, but here and there words of wisdom, of value to every reader, are to be found. In both these publications established facts about tuberculosis are given prominence, whereas nothing is said to puff the latest "cure" or advertise some new sensational statement of doubtful veracity about tuberculosis.

THE QUACK ABROAD.

WITH all its century-old mystical medical lore, one might think that China would be proof against the vulgar wiles of upstart occidental quackery, but the reverse is the case. A Chinese contributor to the current number of *Hygeia* [1] has arranged an interesting little portrait gallery—of which we reproduce one masterpiece—of familiar Western nostrums in Chinese guise. Scientific medicine in China is trying to

An advertisement familiar to Chinese newspaper readers.

combat ignorance and disease, but there, as here, it must bear that old man of the sea—the quack—upon its shoulders. Mr. Chi-Chen Wang states that a survey of several issues of *Shun Pao*, the oldest and largest Chinese newspaper in Shanghai, reveals the startling fact that over one-third of its total advertising space is bought by patent medicine manufacturers or their agents. Some of the provincial papers derive practically all of their advertising revenue from nostrum vendors, for Chinese merchants as a whole have not yet learned to extend their business by advertising methods, and Chinese newspapers cannot afford to turn down space buyers. Patent medicine concerns, continues Mr. Wang, really introduced the art of advertising into China. With their striking illustrations and their striking claims they have lured many victims. Of late, since competition has become keener, the more enterprising have resorted to coupons and no-money-in-advance methods; others have gone so far as to offer free trial treatments. Mr. Wang points out rather ingenuously that the American public (and we presume he might include the British public) is familiar with such inducements and is wary about extravagant claims, but that to the Chinese public "such inducements seem true." There is, however, a reverse to the picture. An American writer to the *Dearborn Independent*, as quoted in a current issue of the *Bruxelles Médical*, states that there are about 2000 Chinese charlatans at present practising in the United States, under such titles as "oriental healer" and "herbalist." Their clientèle is composed entirely of white people, for, the writer remarks, "a Chinaman would never dream of committing himself to their tender mercies." These enterprising gentlemen work by means of "ingenious advertisements" in the newspapers, and the drugs they supply are certainly fascinating. For example, dried toads are prescribed for kidney diseases, while the hair of a lion or a tiger is claimed as a specific for heart troubles. Unfortunately, however, the origin of the latter medicament can usually be traced to a defunct cat or dog. Thus do East and West meet on the common territory of quackery.

[1] Patent Medicine in China. By Chi-Chen Wang, Hygeia, Chicago, January, 1925.

TREATMENT OF LUMBAGO.

To the Editor of THE LANCET.

SIR,—I should like to know the opinion of other medical officers on the treatment of lumbago by subcutaneous injections in the buttocks of 2 gr. doses of sodium salicylate. In 20 cases I have so treated, the injections being given twice a week, there have been no further attacks.

I am, Sir, yours faithfully,

S. K. GANGULI, B.A., M.B.,
Lieut., I.M.S.

A CHARMING ROAD BOOK.

WE have received from the Dunlop Rubber Co. the first volume of a series of pictorial road plans entitled "On the Road," published by Ed. J. Burrow Co. Ltd., Cheltenham and London (price 6*d*.). This volume covers the highway between London and Brighton, Worthing, Eastbourne, Hastings, Folkestone, Dover, and Margate. A clear red road runs from the bottom to the top of each of 37 maps and on each side of it are delightful little sketches of taverns, cathedrals, bridges, fruit fields, and castles which abound in this corner of England. Regular sea-level figures show where the road-user will swoop down into a valley or skim over a hill top, and there are frequent notes and an introduction by Mr. Ed. J. Burrow, F.R.G.S.

A VERY SMALL COOLIDGE TUBE.

A PORTABLE X ray outfit recently developed in the research laboratory of the General Electric Company of America weighs only about 20 lb., and complete with its transformer and all other necessary parts occupies a box measuring 6½ by 10½ by 8¾ inches. The tube operates at 56,000 volts (maximum) and 10 milliampères, and is mounted in oil. The bulb, 1½ inches in diameter, is of glass, which contains 55 per cent. by weight of lead. The window from which the X rays emerge is of thin-walled, lead-free, lime glass. This is probably the smallest Coolidge tube on sale.

THE MEDICAL BUREAU OF LOURDES.

WRITING in the magazine of the Society of our Lady of Lourdes in December, 1924, Dr. Francis Izard criticises the views expressed by THE LANCET some four years ago on the cures reported to have been effected at Lourdes, when we implied that the cases which benefited from pilgrimages to the Shrine of our Lady were of the functional rather than the organic type. Dr. Izard claims that the work of the Medical Bureau of Lourdes is carried out with extreme care and earnestness with the object of establishing all cases of authentic cures, but we hold that a strict winnowing in the preliminary stages of the cases which come under treatment at Lourdes, the scrutiny being carried out by practitioners expert in neurological diagnosis, would materially alter the percentage of cures of organic disease achieved at the grotto.

A BOGUS DOCTOR.

MEDICAL men in London and the provinces have been victims to such an extent of late of a bogus doctor that Scotland Yard has issued a special warning to the profession. The man, who is well educated and of smart appearance, calls on doctors or Irish people of social position. He occasionally claims acquaintance with their relatives and friends living in Ireland, says he has obtained an appointment in Ireland, or for some other reason, has to cross to Ireland that evening, and has run short of cash. He asks for a loan of cash in exchange for a cheque on an Irish bank. He gives the name of Fitzgerald, Moore, Black, McCormack, O'Brien, or Murphy, and is about 40 or 45 years of age. The description of him available is: Height 5 ft. 10 in., dark hair streaked with grey, and brushed back; eyes grey or blue, clean shaven, good appearance and address. Dressed in grey lounge suit, light grey overcoat, and soft felt hat.